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# The Mining Journal

LONDON, OCTOBER 7, 1960

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Price Ninepence

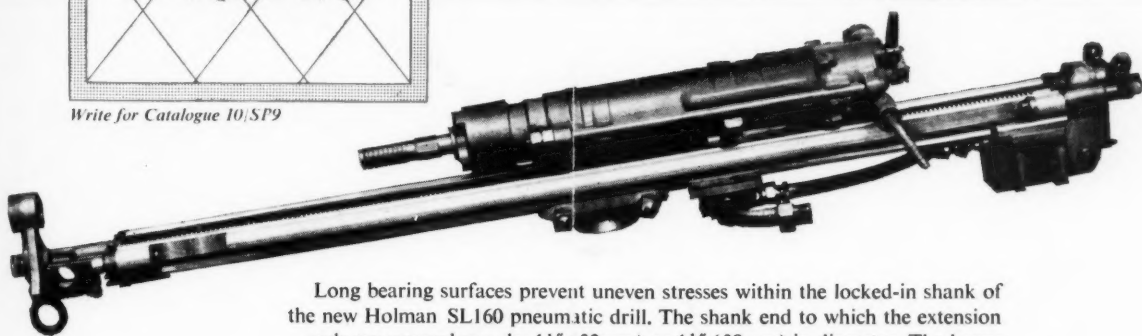
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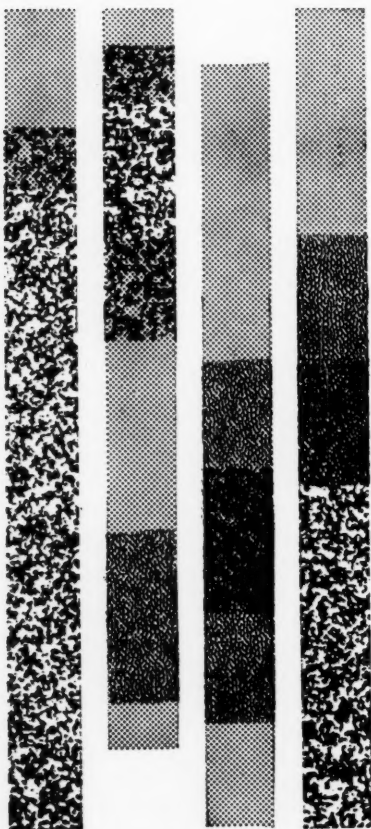
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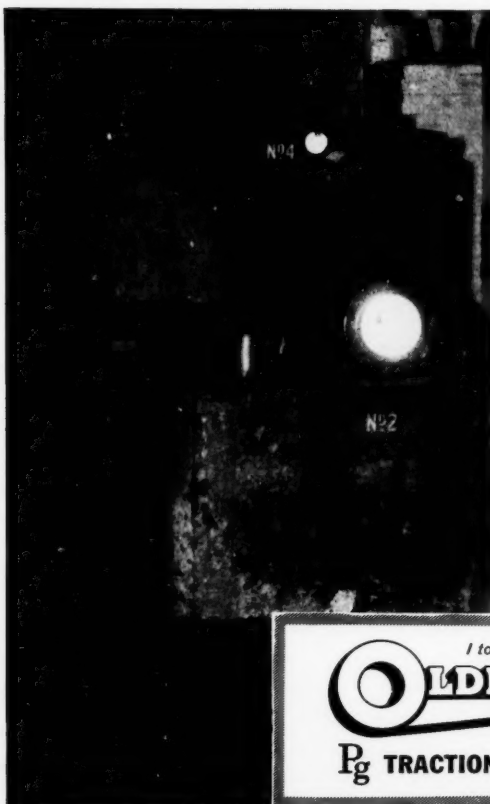
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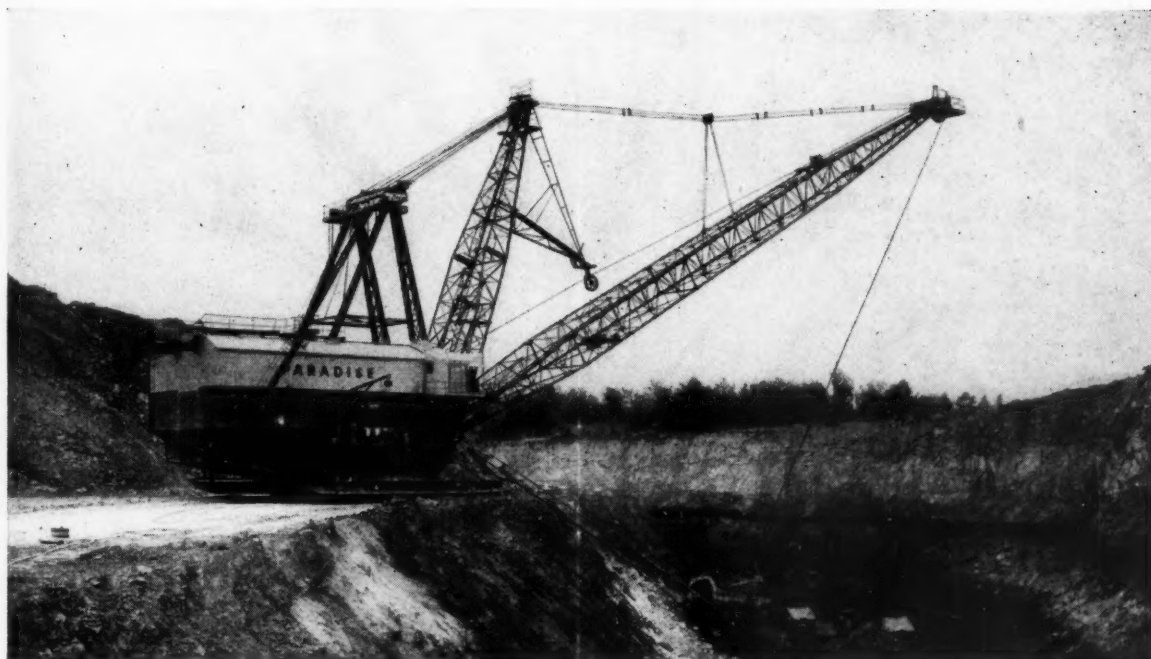
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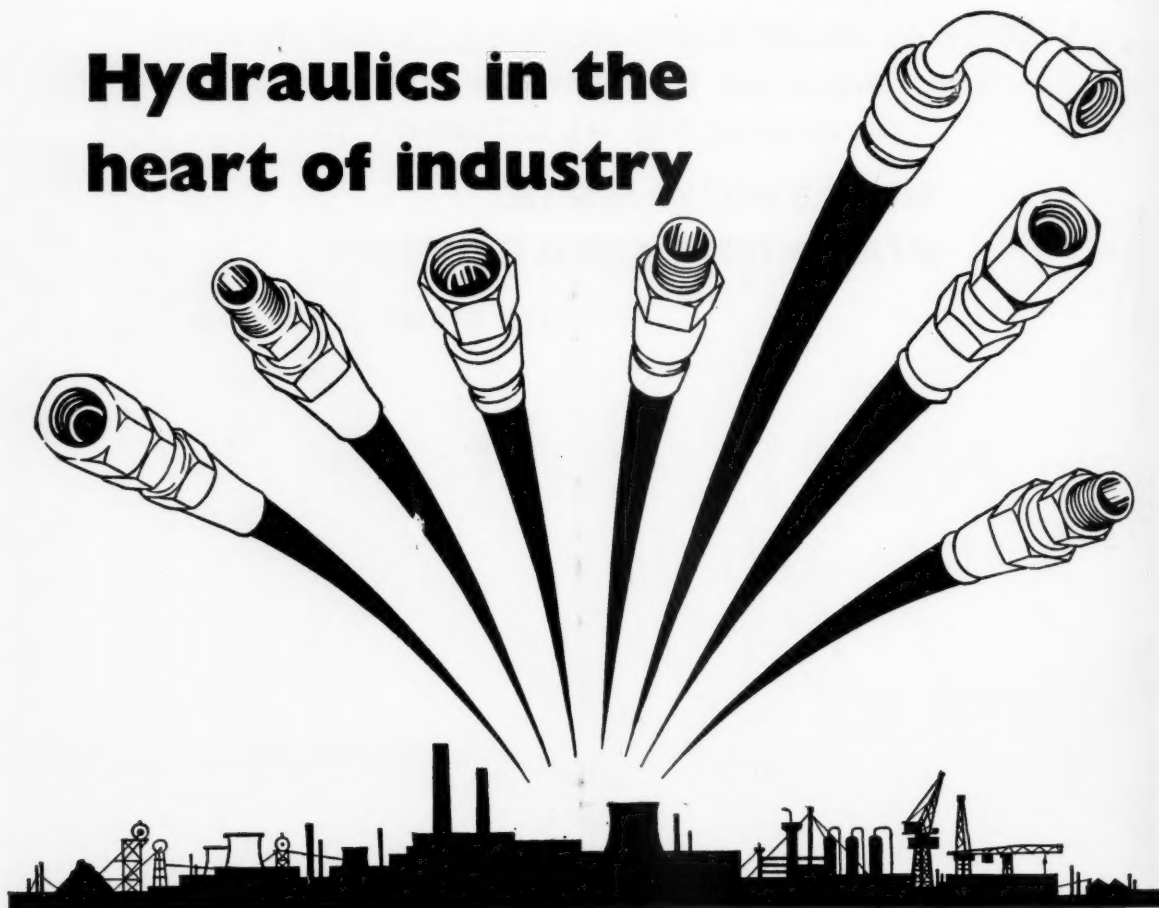
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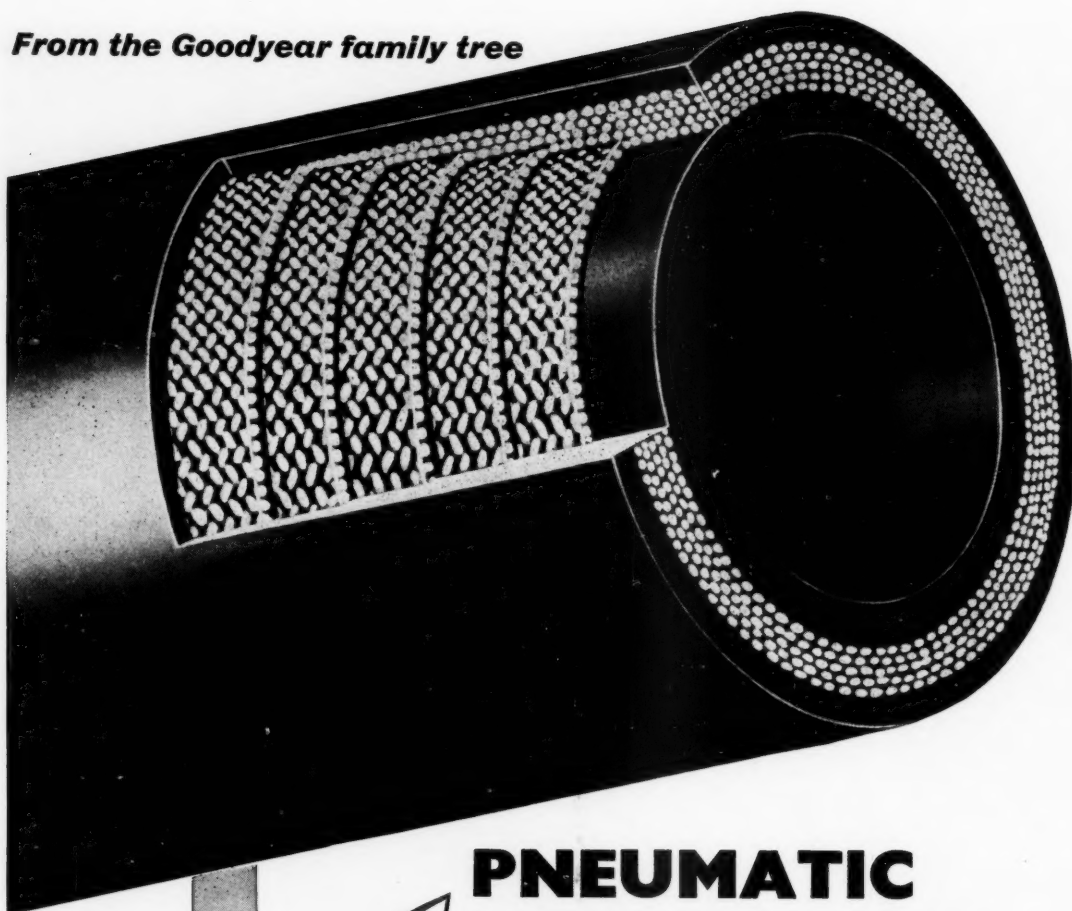
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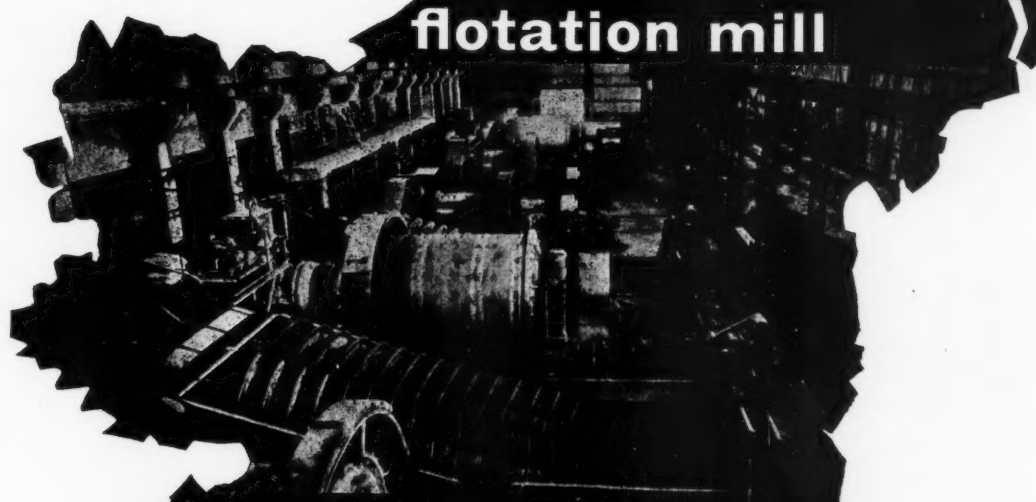


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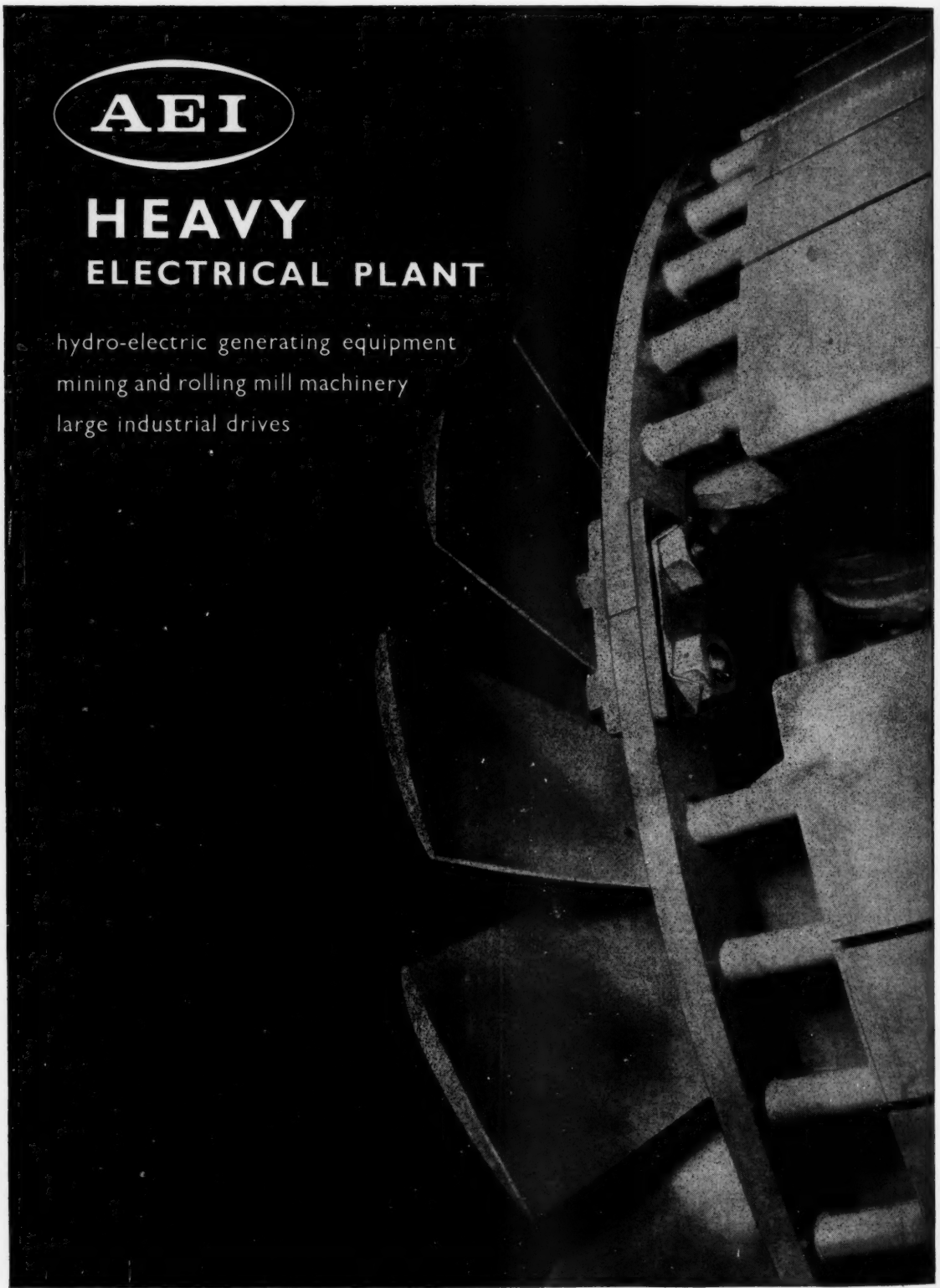
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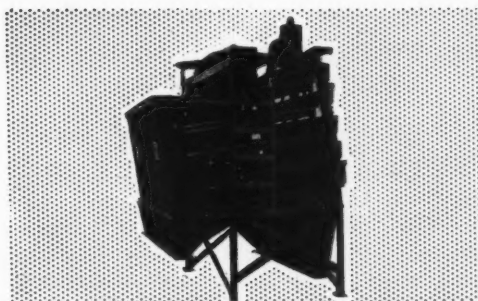
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# The Mining Journal

London, October 7, 1960

## In this issue . . .

|  |     |
|--|-----|
| Bridging the Copper Gap . . . . .                              | 381 |
| Another Record Year for the B.S.I. . . . .                     | 382 |
| Japan Expands Its Bauxite Interests . . . . .                  | 383 |
| Poland's Copper Deposits . . . . .                             | 383 |
| Tin in Tasmania . . . . .                                      | 383 |
| E.C.S.C. Conference on Industrial Recon-<br>version . . . . .  | 383 |
| Latest Developments in Flotation Practice . . . . .            | 384 |
| The Foreign Mineral Trade of the U.S.S.R.<br>in 1959 . . . . . | 385 |
| The Use of Belt Conveyors in Metal<br>Mines—II . . . . .       | 386 |
| Rapid Progress at Mattagami . . . . .                          | 388 |
| Machinery and Equipment . . . . .                              | 389 |
| Mining Miscellany . . . . .                                    | 391 |
| Metals and Minerals . . . . .                                  | 393 |
| London Metal and Ore Prices . . . . .                          | 393 |
| Mining Finance . . . . .                                       | 395 |
| Company Meetings . . . . .                                     | 398 |
| Book Reviews . . . . .   | 400 |

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## Bridging the Copper Gap

**F**OR the past six months, stocks of refined copper have been persistently rising. According to the Copper Institute's figure U.S. stocks amounted at the end of August to 97,379 tons and stocks outside the U.S. to 285,926 tons. At the end of July the respective figures were 91,714 and 277,896, and at the end of March 61,598 and 239,192.

That prices have not been drastically depressed by the weight of these large and ever increasing stocks has been due solely to the confused situation in the Belgian Congo and to the wage disputes in Northern Rhodesia and Chile, as well as to a considerable amount of support buying in recent weeks. Though stability has not been restored to the Congo, Union Minière is operating at almost full strength, its output being routed through Lobito, or Beira, and the situation in Katanga from the standpoint of copper consumers, has become less immediately alarming. A second potential threat to supplies has been averted by the successful negotiations in Northern Rhodesia between the Chamber of Mines and the African Mineworkers' Union. So far as the Chile dispute is concerned, consumers would appear to be well insulated by the present level of world stocks against any conceivable loss of production from this source.

In these circumstances the 10 per cent output cuts announced by the Anglo American and Rhodesian Selection Trust groups will have occasioned little surprise, particularly since it had been known for some weeks that talks about possible cutbacks had been in progress between the two companies. Last month we hazarded the opinion that none of the copper companies would make any definite cutbacks until the outcome of the Chile dispute was known (*The Mining Journal*, Sept. 16, 1960, p. 304). In the event, the Anglo American and R.S.T. announcements came on the same day as the news that union leaders at Chuquicamata had accepted a 25 per cent general wage increase from Anaconda. Later still came the further report that the mine workers had rejected the offer and had voted to continue the strike. To complete a day of alternate bearish and bullish tidings, it was announced that U.S. custom smelters, led by A.S.A.R.C.O., had reduced their price by 2 c. to 31 c. a lb. The net effect of these conflicting developments on market sentiment was a fall in cash copper of £5½ on the day. On the following day the Chilean Minister announced that the government would order a return to work at Chuquicamata if negotiations failed and that it would not authorise a wage increase exceeding 25 per cent—Anaconda's latest offer.

The cutbacks were announced by the two groups in separate statements. Anglo American stated that it had been decided to reduce by 10 per cent the amount of copper marketed by the group, the reduction being equivalent to about 3,000 l.tons a month. The companies would, from time to time, determine whether the 10 per cent reduction should be achieved by cutting production or alternatively by holding copper in stock. R.S.T. stated that its reduction, at a rate of 22,000 tons annually, was the group's contribution towards reducing the present oversupply position in world copper.



It is evident that the cuts announced by the Rhodesian producers, aggregating 58,000 tons annually, are not sufficient to cause any significant swing in copper's statistical position, though they may well have an important impact on market sentiment. However, it has yet to be seen how far the lead thus given will be followed by other producers in Africa and North America. Noranda has already announced that it will cutback by something over 10 per cent. On the other hand it has been stated that no similar move has as yet been considered by Union Minière, and that any steps such as cutting output, which would interfere with the revenues of the Katanga Government, would have to be referred to that government.

Moreover, as our L.M.E. correspondent points out elsewhere, present U.S. price levels in any case make sales of American copper in London unprofitable, so that domestic cutbacks in the U.S. can bring no immediate help to the London market.

However, assuming that reductions of 10 per cent are made by each of the companies which took steps in 1958 to adjust production to demand, the aggregate curtailment of output would be at an annual rate in the region of 130,000 tons a year. In 1959 total world production was 3,620,000 tons and world consumption 3,550,000 tons. Earlier forecasts for the current year placed production at 4,120,000 tons and consumption at 3,850,000 tons, indicating an excess of 270,000 tons (possibly an under-estimate in the light of the present American industrial outlook). In the United States, however, about 60,000 tons of mine output were lost early in the year by continued strikes. Even so, the gap to be bridged is probably still in excess of 200,000 tons. It would appear, therefore, that the 10 per cent cuts are likely to be only a first instalment and might well be followed by further cuts of 5 per cent, which should then be sufficient to bring production into reasonable balance with demand.

There remain, of course, the imponderables in the equation, notably the Chile deadlock (which at the time of writing can scarcely be regarded as resolved) and the trend of the United States economy in the next few months. So far demand in the United States appears to be holding up reasonably well. Fabricators are not overstocked and their order books are fairly well filled. In August orders booked by fabricators totalled 104,000 tons, as compared with 120,000 tons in August, 1959. The September figures will be awaited with more than usual interest as giving a more positive indication of the current trend. In view of the rise in European consumption, the world total for the year may not fall far short of earlier expectations.

From the consumer's point of view, perhaps the most significant point about this week's Rhodesian cutback announcement lies in the recognition, implicit in the Anglo American statement, that stockholding by producers (presumably close to the main areas of consumption) is desirable in the interests of ensuring continued availability of supplies in the event of unexpected production stoppages. There is no doubt that this policy will prove a major factor in long-term price stabilization and still more in reassuring the consumer that henceforth he can rely on uninterrupted availability—a respect in which aluminium has in the post-war years hitherto offered much greater certainty.

#### ANOTHER RECORD YEAR FOR THE B.S.I.

During the year April, 1959, to March, 1960, 297 new and revised British Standards were issued, states the annual report of the British Standards Institution, and the Sales Department dealt with orders for nearly 1,100,000 British Standard Publications.

Under the heading "Colliery Requisites", a number of

developments relating specifically to the mining industry are reviewed in the report. Among them is the preparation of a standard to cover components of the 7 in.-high conveyor (in three widths), based on information submitted by the National Coal Board. This type of conveyor is particularly suitable for face application in mining in association with heavy power loaders. The standard will give detailed requirements for material, design and construction of the conveyor pan assembly and the chain assembly, and will include the "round link" high tensile steel driving chain of B.S. 2969.

Following the completion of the new standard for light and medium rolling stock (B.S. 3237), which provides a specification for pit tubs of capacity up to 60 cu. ft., the scope of the standard now in preparation for mine cars of 45 to 138 cu. ft. capacity will, as for the lighter vehicle, provide detailed specifications of the individual components. For the body and underframe the standards will specify materials and general requirements of design and construction.

Work on the revision of B.S. 889, "Flameproof electric lighting fittings", continues. Difficulties being experienced in the satisfactory fixing of plastics covers to the metal fittings and subsequent testing may make it desirable to publish this part of the standard separately at a later date. The main problems overcome in the work, affecting all types of fittings, have been concerned with the method of temperature measurement, the specification and testing of surface temperature, and the marking on the fitting to denote maximum surface temperature, for which there will be three ranges, viz.: up to 85 deg. C. (Range Z), up to 110 deg. C. (Y) and up to 160 deg. C. (X). These maximum temperatures are associated with the ignition temperatures of explosive gas atmospheres in which the fittings may be used, and are allied to flameproof certification by the Ministry of Power.

The forthcoming standard for the 3.3 kV. 300 amp. interchangeable bolted flameproof cable couplers will provide for interchangeability with half-couplers of different make of 200 amp. capacity, while retaining the same flameproof qualities, and will thereby serve a developing and pressing need. An earlier project, to develop a 200 amp. coupler, will not now proceed.

The glossary of mining terms now being prepared will not be restricted to machines and equipment, but will cover mining engineering generally, both underground and on the colliery surface. The glossary will probably comprise some 20 sections concerned with, for example: ventilation; planning and surveying; blasting, heading and drifting, etc.

The first meeting of ISO's Mining Committee (Secretariat: Germany) was held in April, 1959. Two working groups were set up, one to deal with geological and petrographic symbols and the other concerned with components of conveyors. Germany accepted the Secretariat of the first working group, of which the U.K. is a member, and the U.K. that of the second group.

The main scope of the work of this Committee covers specifications for machinery and equipment used in open-cast and underground mining of solid mineral substances, but excluding the preparation and processing of the minerals. A further field of work concerns the unification of practice regarding plans and drawings used in mine surveying, of methods of calculation of mineral reserves, and of terminology.

The U.K., as Secretariat of the working group on conveyor components, has completed a draft proposal for high-tensile steel (round link) chains for conveyors. This is related to B.S. 2969.

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mittee includes specifications for winding ropes and for mine supports of steel and concrete.

Fourteen Draft ISO recommendations covering the method of analysis of manganese ore were submitted during the year to ISO member bodies for their approval by the Manganese Ore Committee (Secretariat: U.S.S.R.).

No meeting of the Mica Committee (Secretariat: India) was held during the year under review. ISO Recommendation R 67, "Muscovite mica blocks, thins and films; Methods for grading by size", has been published and a similar document dealing with phlogopite mica has been circulated for approval as a draft recommendation. The classification of mica is also being considered.

A draft proposal relating to electrolytic copper was circulated to member countries of the Copper and Copper Alloys Committee (Secretariat: United States) for approval of circulation to all ISO member bodies.

### JAPAN EXPANDS ITS BAUXITE INTERESTS

The Showa Denko Co., a leading Japanese aluminium smelter, and the Toyo Menka Trading Co. are planning to form a joint venture with the Bombay Mineral Supply Co. for the development of a bauxite mine in India. It is planned to set up a new firm capitalized at 20,000,000 rupees in India through equal investments by the Japanese firms and the Indian firm which owns the property.

The mine is claimed to have deposits totalling 10,000,000 tons of high grade bauxite. It started supplying about 60,000 tons of bauxite to the Japanese company this year. Output is expected to be expanded to 100,000 tons next year when the new firm starts operation.

The Japanese aluminium industry is also reported to be seeking bauxite supplies from a mine in north-east Australia. According to a statement by the Nishio Trading Co. Mr. D. J. Hibberd, director of the Commonwealth Aluminium Corporation, owner of the mine, is in Tokyo to negotiate with three leading Japanese aluminium smelters for the sale of Australian bauxite on a long-term supply contract. Mr. Hibberd is expected to conclude export contracts with these smelters for 10,000 tons each for tests at their mills prior to the conclusion of the long-term contract. The Commonwealth Aluminium Corporation, it was further stated, hopes to supply Japan with several hundred thousand tons a year.

### POLAND'S COPPER DEPOSITS

The first tons of copper ore from the Polish deposits—among the largest in the world—are expected to be mined at Lubin sometime in 1964 with full production planned for 1966-67, states the Deputy Minister of Heavy Industry. Mr. W. Czachowski, in the latest issue of the Polish journal *Science and Technique*. The Minister expects the first 10 m. of the pilot shaft at Lubin to be completed this December and progress thereafter at the rate of 20 to 25 m. a month. Three other shafts are due to be sunk at Lubin and a second mine at Polkowice is also due to be developed.

Development of the non-ferrous deposits is to be speeded up and the government recently voted an extra 2,000,000,000 zlotys to be spent over the next five years. Technical information on geology, hydrology and mine building has been supplied by the Soviet Union and East Germany, and Polish technicians have been trained in both countries. As well as copper, 15 other metals have been discovered in the same area.

According to the latest official Polish statistics, Poland imported 23,800 tons of copper in 1958 of which the

U.S.S.R. supplied 23.7 per cent; U.K. 21.7 per cent; West Germany 18.7 per cent; Finland 11.5 per cent; and Switzerland 8.8 per cent.

Polish production of copper ore in 1958 totalled 1,370,000 tons compared with 69,800 tons in 1950 while Polish production of electrolytic in 1958 reached 17,400 tons.

### TIN IN TASMANIA

A new company is being formed in Tasmania, comprising Mount Lyell Mining and Railway Company, and Renison Associated Tin Mines, to work the Renison Bell group of tin mines which contain a number of large pyrite tin lodes. Exploratory work under the direction of the Mount Lyell Company in the Boulder section has proved 184,000 tons of ore assaying 1.23 per cent tin with good prospect of increased tonnage. There is also 1,000,000 tons of indicated ore averaging 0.63 per cent tin, resulting from diamond drilling. The mill has been reconditioned and its capacity increased.

These deposits have, for many years, been regarded as the largest lode tin occurrences in the Commonwealth, but their proper development was not possible until adequate capital became available through the Mount Lyell association. There is important scope for research and improvement in milling recovery. Recovery over a long period has been below 50 per cent. The ore consists of pyrrhotite and cassiterite with a minor percentage of pyrite and some quartz. The practice has been to float off the pyrrhotite and to table the residue for recovery of the cassiterite. The subsequent difficulty has been that while a recovery of mineral could be made on the fine fraction as a very low grade concentrate, a very high loss occurred in the effort to produce a concentrate which would be acceptable to the smelters, without incurring heavy penalty.

### ECSC CONFERENCE ON INDUSTRIAL RECONVERSION

A conference on problems of industrial reconversion in areas in the European Community affected by pit closures took place in Luxembourg recently. Taking part were experts from the six member countries, the United Kingdom, the ILO and other international organizations.

Convened on the initiative of the High Authority of the European Coal and Steel Community, in agreement with the member governments of the Community, the conference examined ways and means to avoid the dislocation of regional economies in areas—such as the Borinage in Belgium—where large-scale pit closures are to take place.

In preparation for the discussions experts from the Common Market countries visited the Durham coalfield to study British experience of creating new industries and new towns in affected areas. A paper on Britain's experience was contributed at the meeting.

Opening the conference on Tuesday, its president—M. Roger Reynaud, Member of the High Authority—said that the High Authority was anxious to contribute to a solution of the serious problems which might arise from the current contraction of the Community's coal industry. The High Authority had already agreed to finance certain reconversion programmes and the creation of new activities both by giving its financial guarantee for such schemes and also by loans. But other authorities could also contribute to a solution, and the aim of the conference was to examine the means of action available in the member states and their experience in this field.

The High Authority, he added, would make concrete proposals to the Community's Council of Ministers on the basis of the conclusions reached by the conference.

## Latest Developments in Flotation Practice

**W**HILST it is well known to many operators that elevated temperatures often improve flotation or at least speed up the process and reduce reagent consumption, the effect of temperature has not been systematically studied.

Perhaps the best known example is the use of elevated temperatures in the flotation of fluorite and certain other non-sulphide minerals such as kyanite and sillimanite, but little data appear to be available. Work by Cooke, Iwasaki and Hyong Sup Choi ("Effect of Temperature on Soap Flotation of Iron Ore," *Min. Eng.*) indicates that there is an appreciable affect in the flotation of iron ores, and although the authors have not attempted to predict the commercial feasibility of high temperature flotation of iron ores, preliminary calculations show that the cost should be excessive and that the advantages gained may well outweigh the extra cost of heating the pulp. Using an ore containing hematite, goethite, quartz and chert, it has been observed that the selectivity increases very appreciably at temperatures substantially above 25 deg. C.

Because of ionic mobility, conditioning at elevated temperatures decreases the time required for attainment of adsorption equilibria, and although it has been stated that variation in the dissociation constants with temperature of the long chain aliphatic acids is small, the solubility in water increases with temperature.

Indeed, this was demonstrated by Hallimond tube tests. Flotation of hematite and of calcium activated quartz are respectively positively and negatively temperature dependent at pH 6 (which is around the optimum value for the separation of iron minerals from quartz) so that increase in temperature would enhance flotation.

It has also been found that at a pH value of 6, and at any given temperature, linolenic, linoleic and elaidic acids are almost equally effective collectors for hematite but decreasingly effective collectors for quartz in the order given. In the case of stearic acid, however, the recovery is strongly temperature dependent and was only complete at 70 deg. C.

It would appear, therefore, that with all the fatty acids investigated, there is an accelerated rate of flotation of iron oxides compared with quartz and a decrease in the flotability of quartz fortuitously activated at pH 6 when elevated temperatures are used. At the same time, improved and more selective frothing characteristics are reported.

### Other Developments

Lowe and Brien, University of Washington, report a very selective flotation of chromite from a refractory ore containing olivine in which the ore is ground with oleic acid, fuel oil and sodium fluoride. Subsequent flotation, after adjusting the pH to about 5.0 with sulphuric acid, produced a 47.4 per cent concentrate with 93 per cent recovery from a 25 per cent head value in which one stage of cleaning was employed.

Columbium Mining Products in the United States report continued improvement in results on pyrochlore by a method in which the key step is flotation using a combination of long chain amines, diamines and wetting agents. Indications are that it is now practical to produce a concentrate of at least 20 per cent  $\text{Cb}_2\text{O}_5$  from ore containing 0.3 per cent  $\text{Cb}_2\text{O}_5$ .

Consolidated Mining and Smelting Corporation of Canada Ltd. have also developed a flotation procedure for the pyrochlore ore from Beaucauge Mines, Ontario, and

Kennecott Copper Corp. have obtained patents for the flotation of columbium-bearing minerals by means of one of the hydroxy-guinoiline chemicals as a collector.

A difficult chalcopyrite-pyrite separation has been described recently by W. R. Wade in *World Mining*, in which difficulty was experienced due to the extremely fine intergrowth of the minerals, the rapid oxidation of the ore which made the pulp extremely acidic, and the presence of copper sulphate which activated the pyrite.

A solution was found, however, by careful control of the pH value at 11.5 after very fine grinding and employing sodium sulphide, which was added to the mill in order to precipitate the soluble copper. Although the amount required theoretically was a little over 0.8 lb. per 1 lb. of soluble copper, it was found in practice that some 2.0 lb. per 1 lb. was advantageous. The additional sodium sulphide acted as a pyrite depressant, the action being partly further assisted by the addition of sodium sulphite and lime added subsequently. The sodium sulphite was preferred to cyanide for fear of the pollution of creek water nearby. Not only is the soluble copper precipitated so that it no longer activates the pyrite, but the precipitate floats rapidly and represents an appreciable recovery of copper at a lower cost than could be made by precipitation on tin can scrap.

### Activity in South America

A considerable amount of expansion has been seen in copper production from South America. Two new projects, El Salvador and Toquepala, using conventional flotation plants and planned to yield up to 100,000 tons and 150,000 tons of copper per annum respectively, are already in production and another is now planned.

A bold project designed to recover copper from a deposit consisting predominantly of atacamite will be put into operation in Northern Chile during the latter half of this year by Empresa Minera de Mantos Blancos, S.A. according to a report in *Mining World*. Treatment will involve percolation leaching of the ore with sulphuric acid, followed by precipitation of the copper as cupreous chloride using sulphur dioxide in absorption towers.

This method has been developed because the high chlorine content of the solution precludes electrolytic precipitation, because anodes would be attacked, insoluble cupreous chloride deposited on the cathodes, and chlorine gas liberated in the tankhouse. After precipitation the cupreous chloride will be mixed with limestone and coal, pelletized, dried and smelted in oilfired rotary furnaces to produce crude copper for further refining by pyrometallurgical means.

Chilean refined sulphur will be used to provide the sulphuric acid in a contact plant.

### Flotation of Large Particles

At the phosphate beneficiation plant of the San Francisco Chemical Co., Montpelier, Idaho, flotation of comparatively large particles of phosphate is achieved by conditioning at a very high pulp density (about 80 per cent) in revolving drums containing spiral flights and floating with oversize bubbles.

The use of comparatively large bubbles has also been found to be desirable in floating pyrite from tin ore concentrate for the same reason.

## THE FOREIGN MINERAL TRADE OF THE U.S.S.R. IN 1959

FOREIGN trade statistics for 1959 recently released by the U.S.S.R. present more evidence of the growing mineral strength of the Soviet Union and reveal further progress toward that nation's goal of mineral self-sufficiency. The 1959 report is the fifth in a series of detailed published statements on foreign trade. Since 1955, Soviet mineral exports have doubled in value, indicating production in excess of current requirements for many commodities. During the same period imports increased only about 40 per cent, and minerals have declined significantly in relative importance in the total import trade of the U.S.S.R. These facts and other available information support the conclusion that imports are supplying less and less of the mineral raw materials consumed domestically. Attainment of self-sufficiency continues to be an important objective of Soviet mineral policy.

The value of mineral exports in 1959 was 14.3 per cent above that of 1958 and accounted for 33.4 per cent of the total Soviet export trade compared with 37.0 per cent in 1958 and 26.1 per cent in 1955. The largest gain in 1959 over 1958 was in shipments of liquid fuels. Foreign sales of coal also increased. Consequently, the fuel group became a more important factor in the Soviet mineral export trade in 1959.

Soviet deliveries to Free World nations of zinc, tin, and aluminium, which affected adversely Western markets in 1958, declined in 1959. Total exports of bulk commodities such as coal, crude oil, petroleum products, iron ore, pig iron, rolled steel, manganese ore, chromite, as well as asbestos, apatite concentrate, and potash salts increased substantially. The proportions of Soviet mineral exports shipped to Free World and Communist markets have changed little during recent years.

The value of mineral imports in 1959 increased 6.8 per cent over 1958; it was 19.9 per cent of total Soviet importations, compared with 21.8 per cent in 1958 and 25.8 per cent in 1956. Crude and fabricated metals comprised over 76 per cent of the mineral imports of the U.S.S.R. in 1959; fuels, 23 per cent; and nonmetallic minerals, 1 per cent. In the metalliferous field, a decline of 18 per cent in imports of ores and concentrates was recorded in 1959, compared with 1958, whereas receipts of refined and fabricated metals rose 37 per cent. Despite large increases in exports of Soviet crude oil and petroleum products in 1959, imports of these commodities were slightly higher than in 1958. More lead and zinc metal was bought in 1959 but reported imports of ore and concentrates of these commodities were substantially lower. Imports of copper in the form of metal were higher in 1959 than in 1958.

In contrast to the stable geographic pattern of Soviet export trade in minerals, that of imports has fluctuated in response to both political and economic objectives. During 1959 the share of mineral imports from Free World nations increased substantially as the U.S.S.R. acquired large quantities of copper and steel products to fill shortages at home. As a consequence, Soviet economic ties to several new Free World countries, particularly on the African Continent, as well as with the nations of Western Europe, were strengthened.

The 1959 report on U.S.S.R. foreign trade statistics reveals little change in Soviet methods of reporting foreign trade. Large gaps in the import data on ores and concentrates and non-ferrous metals, particularly in receipts from other nations of the Sino-Soviet bloc, continue to exist. Data on trade in precious metals are absent. However, the 1959 edition of *Statistical Summary on Foreign Trade* dis-

A statistical review of the Soviet foreign trade in minerals has been published by the Bureau of Mines, U.S. Department of the Interior, as "Mineral Trade Notes", Supplement No. 60, September, 1960. The author is Alexander Gakner, East European specialist, Division of Foreign Activities, Washington

closes for the first time since World War II quantitative information of copper metal imports.

The basic trends in the Soviet trade in minerals during the past five years are reflected in the following tabulation:

|                  | 1955   | Soviet roubles (000,000) |        |        |        |  |
|------------------|--------|--------------------------|--------|--------|--------|--|
|                  |        | 1956                     | 1957   | 1958   | 1959   |  |
| <i>Exports:</i>  |        |                          |        |        |        |  |
| Value all ..     | 13,874 | 14,677                   | 17,526 | 17,190 | 21,763 |  |
| Value mineral .. | 3,616  | 4,553                    | 6,079  | 6,366  | 7,277  |  |
| Mineral exports  |        |                          |        |        |        |  |
| (% of total) ..  | 26.1   | 31.0                     | 34.7   | 37.0   | 33.4   |  |
| <i>Imports:</i>  |        |                          |        |        |        |  |
| Value all ..     | 12,242 | 14,453                   | 15,751 | 17,399 | 20,293 |  |
| Value mineral .. | 2,854  | 3,727                    | 3,869  | 3,789  | 4,045  |  |
| Mineral imports  |        |                          |        |        |        |  |
| (% of total) ..  | 23.3   | 25.8                     | 24.5   | 21.8   | 19.9   |  |

Note: The nominal commercial exchange rate of 4 Soviet roubles to \$ U.S. 1 is used throughout the report.

### Fuels

In 1959 Soviet exports of crude petroleum and petroleum products increased by more than one-third, reflecting the growing oversupply of liquid fuels in the country. In view of Soviet plans to double petroleum production during the remaining five years of the current Seven-Year Plan, substantial increases in exports of crude oil and petroleum products may be expected. Last year exports of solid fuels (coal, anthracite, and coke) increased nearly 10 per cent. Imports also increased, but the Soviet Union remained a large net exporter of solid fuels.

Trends in Soviet fuel trade for the past five years are shown in the following tabulation:

|                       | 1955  | Soviet roubles (000,000) |         |         |         |
|-----------------------|-------|--------------------------|---------|---------|---------|
|                       | 1956  | 1957                     | 1958    | 1959    |         |
| <i>Solid fuels :</i>  |       |                          |         |         |         |
| Value exports ..      | 391.4 | 571.1                    | 997.8   | 879.2   | 916.4   |
| Total exports (%)     | 2.8   | 3.9                      | 5.7     | 5.1     | 4.2     |
| Value imports ..      | 507.8 | 575.4                    | 354.8   | 308.2   | 342.9   |
| Total imports (%)     | 4.1   | 3.3                      | 2.2     | 1.8     | 1.7     |
| <i>Liquid fuels :</i> |       |                          |         |         |         |
| Value exports ..      | 914.8 | 1,132.5                  | 1,584.6 | 1,719.7 | 2,268.2 |
| Total exports (%)     | 6.6   | 7.7                      | 9.0     | 10.0    | 10.4    |
| Value imports ..      | 492.3 | 548.7                    | 477.7   | 540.7   | 582.4   |
| Total imports (%)     | 4.0   | 3.8                      | 3.0     | 3.1     | 2.9     |

### Metalliferous Products

Exports of ores and concentrates rose in value for the fifth consecutive year in 1959 while imports declined for the third successive year. Many details of trade in this category remain obscure. Approximately 97 per cent of the ore and concentrate import is not identified by commodity or country of origin. For example, the Soviets admit to sizable imports of molybdenum and tungsten concentrates from China but the statistical summary does not reveal details.

The basic trends in the Soviet trade in ores and concentrates during the past 5 years are shown in the following tabulation:



|                        | 1955    | Soviet roubles (000,000) |         |         |         |
|------------------------|---------|--------------------------|---------|---------|---------|
|                        | 1955    | 1956                     | 1957    | 1958    | 1959    |
| Value exports          | 461.5   | 520.1                    | 735.8   | 759.8   | 863.1   |
| Per cent total exports | 3.3     | 3.5                      | 4.2     | 4.4     | 4.0     |
| Value imports          | 1,005.1 | 1,498.5                  | 1,813.1 | 1,613.9 | 1,324.2 |
| Per cent total imports | 8.2     | 10.4                     | 11.5    | 9.3     | 6.5     |

Exports of pig iron in 1959 increased by 400,000 tonnes over those of the previous year to a new high of nearly 1,500,000 tonnes as the Soviet Union continued to lead the world as an exporter of pig iron.

Basic trends in Soviet trade in ferrous metals and ferroalloys during the past 5 years are as follows:

|  | 1955    | Soviet roubles (000,000) |         |         |         |
|--|---------|--------------------------|---------|---------|---------|
|  | 1955    | 1956                     | 1957    | 1958    | 1959    |
| <b>Ferrous metals and ferroalloys:</b> |         |                          |         |         |         |
| Value exports                          | 1,271.8 | 1,534.7                  | 1,754.8 | 1,978.2 | 2,188.7 |
| Total exports (%)                      | 9.2     | 10.5                     | 10.0    | 11.5    | 10.0    |
| Value imports                          | 284.2   | 582.5                    | 654.0   | 733.6   | 1,060.6 |
| Total imports (%)                      | 2.3     | 4.0                      | 4.2     | 4.2     | 5.2     |

The U.S.S.R. imported 93,800 tonnes of ingot copper in 1958 and 115,900 tons in 1959. In 1958 the United Kingdom supplied 70 per cent of the total, but in 1959 half of the copper metal imported originated in Africa—Rhodesia (45,100 tonnes) and Uganda (10,900 tonnes), neither of which shipped copper to the Soviets in 1958.

The U.K. supplied less than a quarter of the 1959 total. Soviet imports of zinc, lead, and tin increased slightly in 1959 while exports of aluminium dropped one-third.

|                            | 1955  | Soviet roubles (000,000) |       |       |       |
|----------------------------|-------|--------------------------|-------|-------|-------|
|                            | 1955  | 1956                     | 1957  | 1958  | 1959  |
| <b>Non-ferrous metals:</b> |       |                          |       |       |       |
| Value exports              | 442.9 | 629.3                    | 811.6 | 790.4 | 783.7 |
| Total exports (%)          | 3.2   | 4.3                      | 4.7   | 4.6   | 3.6   |
| Value imports              | 532.4 | 572.4                    | 510.6 | 532.4 | 679.4 |
| Total imports (%)          | 4.4   | 4.0                      | 3.2   | 3.1   | 3.3   |

### Non-Metals

The Statistical Summary reflects no outstanding developments in Soviet non-metals trade. The principal exports are asbestos, apatite concentrate, and potash salts and shipments have increased steadily during the past 5 years. Substantial quantities of sulphur are exported and imported; exports advanced and imports declined in 1959 in comparison with the 1958 trade. Major import items are barytes, fluorspar, and talc.

|                    | 1955  | Soviet roubles (000,000) |       |       |       |
|--------------------|-------|--------------------------|-------|-------|-------|
|                    | 1955  | 1956                     | 1957  | 1958  | 1959  |
| <b>Non-metals:</b> |       |                          |       |       |       |
| Value exports      | 133.4 | 165.6                    | 193.9 | 238.6 | 257.3 |
| Total exports (%)  | 1.0   | 1.1                      | 1.1   | 1.4   | 1.2   |
| Value imports      | 32.3  | 49.5                     | 58.4  | 60.3  | 55.1  |
| Total imports (%)  | 0.3   | 0.3                      | 0.4   | 0.3   | 0.3   |

## The Use of Belt Conveyors in Metal Mines — II

**I**N an endeavour to divorce the two functions of carrying the load and transmitting tension, belts have been devised whereby the stress is taken by external cables. Pioneering this type was the cable belt conveyor.

The prototype rope driven conveyor, invented and marketed by Cable Belt Ltd., was installed in a British coal mine in 1951, being responsible for transporting the entire output of coal from the mine. Many more have been installed in coal mines in Britain and other countries of the world, but this does not mean that the use of this type of conveyor is restricted to the transport of coal for, like conventional belt conveyors, other bulk materials can be transported efficiently and at low cost: for example, Cable Belt rope driven conveyors are in operation transporting iron ore, gold ore, diamondiferous ore, chalk, etc., and it is intended to deal here with the application in iron ore mining.

One such installation has, therefore, been selected, and it is proposed to commence with a description of this installation, followed by a description of the problems associated with transport of iron ore by belt conveyors, and the means to overcome these problems, or at any rate, reduce to a minimum their influence on the satisfactory operation of the equipment.

At the Mine de Murville, Mont-Bonvillers, France, the iron ore is mined underground and transported to the foot of the slope shaft by electric trolley locomotives and mine cars, where it is crushed to 12 in. cube maximum, prior to being conveyed at the rate of 800 tons an hour out of the mine by the Cable Belt rope driven conveyor system. The illustration opposite shows the disposition of the slope shaft from which it will be seen that the shaft is made up of two legs, each with a gradient of approximately 1 in 3 and almost in line in plan.

Each leg of the shaft is fitted with a 36 in. wide Cable Belt rope driven conveyor with a belt speed of 350 ft./min. and powered by a 400 h.p. motor. The ore is fed on to No: 1 conveyor by means of a plate feeder and short accelerating belt feeder from where it is transferred to

Following the description of the successful Meco conveyor installations in the opening article of this series, attention is now devoted to cable belt and steel band conveyors

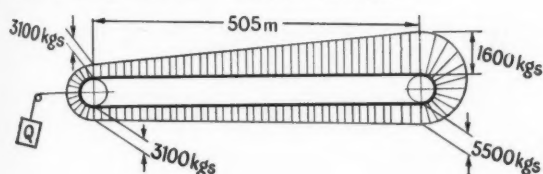
No: 2 Conveyor. No: 2 Conveyor coming out at the surface continues at the same gradient up a lattice braced gantry to a height of approximately 50 ft. above ground level over a battery of 17 storage bunkers from which the ore is drawn into rail wagons. Discharge from No: 2 Conveyor into any one of the storage bunkers is by means of a motorized travelling throw-off carriage as used with a conventional belt conveyor.

The main problems to be overcome when transporting iron ore by belt conveyor are: Impact of the material at feed points on to the belt; abrasive qualities of the material; the stickiness of most grades of mine iron ore.

The first two problems are directly associated and it is well known that to prolong belt life it is essential to reduce to a minimum the height of fall of the material on to the belt, and to feed the material on to the belt at, or as near as possible, the speed of the belt and in line with its direction of travel so as to avoid abrasion of the belt rubber cover.

The Cable Belt rope driven conveyor, like the conventional belt conveyor, is subject to belt degradation if no thought is given to the feed-on conditions and the first consideration is to crush the material, if at all possible, before transporting it by the belt, for by so doing the belt life will be increased to a very worth while degree. At the Mine de Murville the short accelerating belt feeder is positioned as low as possible to the No: 1 Cable Belt, such that the fall of material on to the belt is reduced to an absolute minimum. The speed of the accelerating belt is so designed that the iron ore is fed on to the Cable Belt at approximately the same belt speed, and in view of this, abrasive wear on the carrying side of the belt is negligible. Pneumatic impact idlers are also fitted under





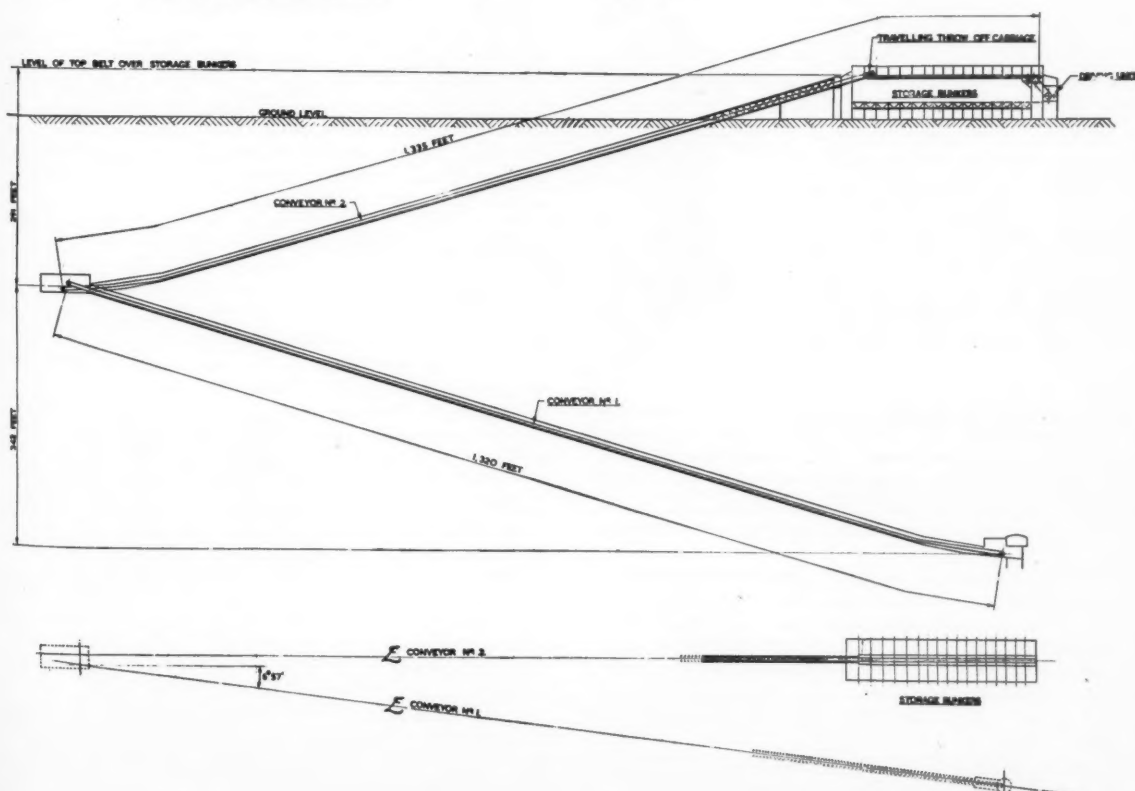
both the conveyors at the feed point to absorb any impact which is unavoidably present.

When material is fed on to the Cable Belt rope driven conveyor there is no further movement until it is discharged from the belt because the absence of belt troughing idlers allows the material to lie inertly on the belt.

The third problem, that of the stickiness of most grades of iron ore, is of much less consequence to the successful operation of a Cable Belt rope driven conveyor than it is with the conventional belt conveyor. Adequate belt cleaning facilities are absolutely essential with the conventional belt conveyor to avoid sticky fines adhering to the belt being carried back on the return run. The adhering fines are picked up by the return belt supporting rollers resulting in the roller shells being built up unevenly, causing difficulties with belt tracking and subsequent belt edge wear of the out of track belt rubbing against supporting framework. In addition, the fines, through abrasion, cause rapid wear to the return roller shells.

The Cable Belt rope driven conveyor is not affected by this problem, in that the belt is not supported by idlers either on its carrying or return run, and in consequence a dirty return belt does not influence belt tracking. Nevertheless, some degree of belt cleaning is necessary and cleaning gear for conventional belt conveyors can be used with the Cable Belt.

Diagrammatic layout of Cable Belt rope driven conveyors at Mine de Murville, France



### Rubber-Coated Steel Band

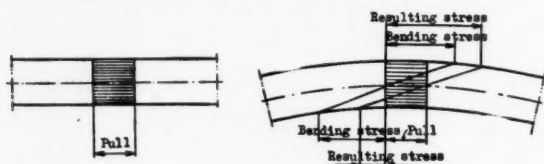
As an alternative solution to the problem of high tension in belt conveyors, much work has been carried out using high tensile strength steel bands instead of the earlier type using cotton duck as the medium through which tension is transmitted.

Conveyors of the type installed at Malmberget, Sweden, are operating at very high working tensions in the bands, and it has, therefore, been necessary to carry out extensive testing with regard to the fatigue properties of the bands. Due to the fact that the band core consists of steel, it is consequently the tensions arising in the cold rolled and tempered steel band during one turn or cycle that must be analyzed. These conveyors were preliminarily designed on the basis of existing formulae and experience, and using these figures, a series of fatigue tests were carried out, for which small test samples emanating from steel conveyor bands of ordinary type were used.

At the same time a testing machine was built (see sketch above), where larger units of bands could be tried out. All tensions were measured from one and the same surface of the bands.

By means of a tension weight ("Q" in the sketch above) added or slack side tension is given to the band ensuring sufficient driving friction between the band and the drive pulley. Due to the weight of the band itself the band tension increases towards the drive pulley. To this is added the pull in the band that is needed in order to hoist the load and to overcome the resistance of friction in the supporting idlers, etc. As may be seen from the figure above, the band tension has its maximum value at the drive pulley, where it amounts to abt. 16,000 kg. This tension corresponds to a pull in the steel core of approx. 14.3 kg/mm<sup>2</sup>.

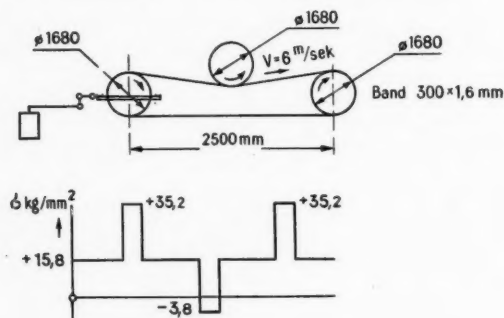
When the band passes over the supporting idlers and the terminal pulleys, bending stresses arise in the steel core, which are superimposed on the tensile stresses. The figure below shows how the resulting stresses vary in magnitude and direction in the various layers of the steel core.



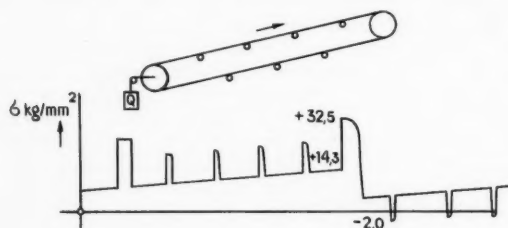
The steel core in a conveyor band is exposed to changing stresses due to the fact that the bending stresses have positive and negative values. The purpose of the testing in the fatigue machine was to establish how the steel and the band joint would behave with stresses of the magnitude to be expected in the installations to be built at Malmberget.

Below is shown a schematic picture of the testing machine and a graph indicating how the stresses change in the outer layer of the steel core during one cycle.

The alternating stress was  $15.7 \pm 19.5 \text{ kg/mm}^2$ .



The picture of the tensions in the bands on the ore conveyors is more complicated due to a great many lower peaks of tension over the supporting idlers.



In this diagram the course of tension is shown, beginning at a point marked "X" situated just before the tension pulley. The largest stress, that is the sum of the pull and bendings in the outside of the steel core is approx.  $+32.5 \text{ kg/mm}^2$ , and the minimum stress amounts to  $-2.0 \text{ kg/mm}^2$ . This is equal to an alternating tensions of approx.  $15.3 \pm 17.2 \text{ kg/mm}^2$ .

The stresses occurring over the supporting idlers have been calculated according to formulas which have been deduced for this very particular case and have been checked by means of the method with a strain gauge. The permissible stresses in the top strand of the band and over the supporting idlers have been selected so low on purpose so as to not contribute to a premature fatigue rupture.

Using the results obtained by the testing methods described, the Malmberget conveyors were designed.

## RAPID PROGRESS AT MATTAGAMI

from our Canadian Correspondent

THE first major development in the comparatively new Mattagami district of north-western Quebec is making fine headway in the long programme of winning new base metal deposits for production.

Mattagami Lake Mines, the discoverer of a rich new base metal belt that lured Canada's and America's top-flight corporations to the district, expects to complete shaft sinking this autumn. Objective of 1,200 ft., for the six-compartment opening, is tentatively set for the end of October. This will give the company five levels to the 1,000 ft. horizon, site of the primary crusher installation.

Management, representing Noranda Mines, McIntyre Porcupine Mines and Canadian Exploration, has set sights on a 1962 production date. Ultimate capacity is still of a flexible nature but it is assumed that the initial daily rate should be at least 2,000 tons flotation.

Extensive surface diamond drilling at Mattagami indicated two orebodies totalling in the neighbourhood of 23,000,000 tons. The No. 1 deposit is officially reported to contain 21,000,000 tons averaging 12.76 per cent zinc, 0.68 per cent copper, 0.018 oz. gold and 1.31 oz. silver. The No. 2 deposit indicated 2,000,000 tons averaging 12.86 per cent zinc, 0.86 per cent copper, 0.013 oz. gold and 0.99 oz. silver.

Under the co-operative decision of management future copper concentrates from the operation will be treated in the smelting plant of Noranda Mines, the nearest facilities available to the Mattagami camp. Decision on treatment of zinc concentrates has yet to be made, due to the unavailability of a zinc smelter in Eastern Canada.

The financing group has been studying the feasibility of establishing a zinc refinery in the east and the location and economics of that possibility are now under serious study. Since Consolidated Mining and Smelting Co. of Canada and Hudson Bay Mining and Smelting service the zinc trade in Canada, it is assumed Mattagami's future product would be made available to the export market.

### Exploration in Vancouver Island

Intrepid Canadian mining interests are commencing to test the mineral potential of the ice-capped mountain range in south-central Vancouver Island, British Columbia.

Kopan Developments Ltd., a fairly new incorporation, has optioned 26 Crown granted and staked claims on the Big Interior Mountain. About the turn of the century surface exploration indicated copper values ranging from 0.50 per cent to 11 per cent copper. The present programme is designed to explore the source of this mineralization.

Inaccessibility by conventional methods of travel is necessitating drilling equipment and supplies being flown to the mine site by helicopter. Initial work calls for the completion of 3,000 ft. of drilling in the face of the cliff from the Big Interior Mountain. A year ago, under the supervision of a syndicate, two holes were drilled to confirm the existence of widespread low-grade copper mineralization.

Tentative consideration is being given to the eventual development of the property by adits in the mountainside should diamond drilling indicate sufficient tonnage to warrant underground work.

**Machinery and Equipment****Improved Type of Hammer Mill**

An improved type of hammer mill has been developed specifically for the asbestos mining industry reports the Philadelphia organ, *Asbestos*. The advantages claimed for this new mill are a higher rate of production with a lower operating and replacement cost than any other type of mill hitherto manufactured, and a wide adaptability to meet varying service and production requirements, together with greatly improved ease of service and maintenance.

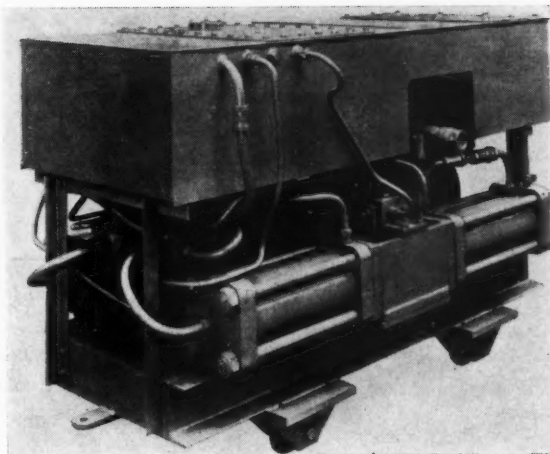
It is stated by the manufacturers that independent tests recently conducted by one of the largest asbestos producers in South Africa show that the Fiberok Mill produced asbestos fibre at less than one-third to one-tenth the cost in replacement spares and labour than four other different types of mill tested under the same conditions. The rate of production achieved by the Fiberok Mill was approximately 70 per cent higher than the average of the other four types tested.

The mill can be very quickly altered to suit either right or left-hand operation, and the angle of discharge can be readily adjusted through 180 deg. from horizontal, through the vertical to horizontal on the other side. For ease of maintenance, the feed door can open in either direction.

The beater tips are carried on hinged hangers which allow shock loads to be absorbed, and are capable of adjustment to give either a 1 in. or  $\frac{1}{2}$  in. clearance between the tips and the radial liners. The mounting of the beater tips is of special interest. It has previously been found that erosion of beaters always starts at any indentation—e.g., a bolt hole—in the surface of the beater, and that the rate of erosion is always greatly accelerated by any such surface irregularity. The Fiberok beater tips are secured by an ingenious clip-on method, assisted by centrifugal force, thereby dispensing with the need for bolts and bolt holes.

The rated capacity of the machine is 10 t.p.h. of hard ore (banded ironstone or dolomite) passing through a  $1\frac{1}{2}$  in. ring. The machine has been developed

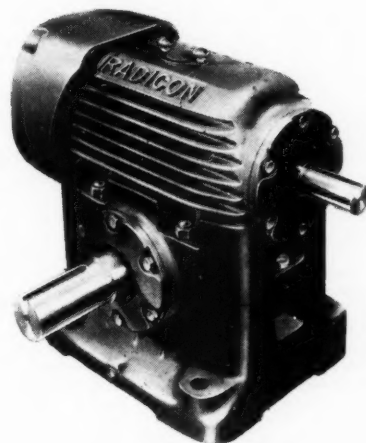
At right, along-side, the water infusion unit by Richard Sutcliffe Ltd. Below, in centre of page, is the Solid Foot Type worm gear unit by David Brown Industries Ltd. At bottom left is the Brown Adaptable Type unit



by Barberton Iron and Steel (Pty.), Ltd., South Africa.

**RANGE OF WORM GEAR UNITS**

An exhibition held recently in London introduced a new range of Radicon worm gear units manufactured by David Brown Industries Ltd. The new range covers centre distances from  $1\frac{1}{2}$  in. to 8 in. and comprises two basic



efficient oil seals on the high speed shaft, provides efficient oil sealing in all mounting positions.

So far the new range of Adaptable units covers only single reduction types but designs are now being prepared to cover double reduction units and motorized units. It is anticipated that production of these types will begin early next year.

The Solid Foot range comprises five sizes in three basic types and covers the requirements of drives up to approximately 80 h.p. They are the "U" type, where the high speed shaft is located underneath the slow speed shaft, which is an ideal arrangement for the majority of applications; the "O" type where the high speed shaft is over the slow speed shaft; and the "V" type where the high speed shaft is horizontal and the slow speed shaft vertical.

All the Solid Foot type units are interchangeable as units with corresponding Radicon units of the previous design but none of the individual components is interchangeable. Sizes 400, 600 and 800 are in accordance with British Standard Specification No. 3027: 1958.

The new series so far covers "U" and "O" type units and "V" type units will be marketed early next year, together with a range of 1st Reduction Helical Units suitable for flange mounting to the Solid Foot type worm reducers and giving overall ratios of up to 280 to 1.

**WATER INFUSION APPARATUS**

The water infusion pump manufactured by Richard Sutcliffe Ltd., consists of an oil hydraulic circuit which drives two reciprocating rams which are in turn directly coupled to the two rams of the water pump. The oil is supplied from a variable delivery pump which allows the oil circuit to select automatically the pressure and quantity of water which suits it best. The output of the water pump is eight gallons at 3,000 lb. p.s.i. and infinitely variable down to twenty-two gallons at 1,100 lb. p.s.i., the pressure and volume varying inversely.

The control of the pump can be adjusted so that an output of 5 gallons at 1,500 lb. p.s.i. is obtained to supply water for a conveyor ramming system.



types, the Adaptable for centre distances of  $1\frac{1}{2}$  in. to  $3\frac{1}{2}$  in. and the Solid Foot type for centre distances of 4 in. to 8 in. These are allocated size designations of 112 to 337 for the Adaptable range and 400 to 800 for the Solid Foot type.

The Adaptable range covers seven sizes and gives power coverage up to approximately 10 h.p. Units are characterized by the fitting of detachable feet, a feature which gives versatility of application and the number of different mounting positions is almost unlimited. Compared with the previous series, the new range of Adaptable units includes four additional sizes. The range of ratios has also been increased and now extends from 5 to 1 to 70 to 1. A special Drywell cover is now fitted to the slow speed shaft and this, together with



Under these conditions, at a small extra cost it is possible to utilize the oil circuit to drive a 5 h.p. portable stable hole conveyor or a hydraulic drill.

The variable delivery oil pump is driven from a 30 h.p. electric motor—fan cooled—flameproof (550 volts—3 phase—50 cycles).

Mounted above the electric motor and pump is a mild steel tank with two compartments in which are stored the water and the hydraulic oil, and a temperature thermostat is fitted to the tank. The whole of this equipment is mounted on a mild steel fabricated baseplate mounted on wheels at a rail gauge to suit requirements.

The purpose of the Sutcliffe infusion gun is to provide a means of sealing the hole drilled into the coal and at the same time allow the pumping of high pressure water for seam infusion.

The gun consists basically of a neoprene seal expanded radially against a shoulder by means of hydraulic pressure. The seal is contained in a tube which has two separate passages, one of which allows passage of the infusion liquid and the other of which allows hydraulic liquid to actuate the piston expanding the seal. The hydraulic fluid is supplied by means of a hand pump and the infusion fluid by a power unit. For deep drillings guns may be used in series.

#### FLAME SAFETY LAMPS

A new series of Wolf flame safety lamps is announced by The Wolf Safety Lamp Co., many important features of past design having been retained but simplified, resulting in smaller, lighter and more compact lamps. All have

round wicks, cotton wool filled vessels, Wolf horizontal magnetic locks and a middle air feed and shut-off. All the tops are identical and all lamps have the same gauzes, glasses and wicks, use the same fuel and burn 12 to 14 hours.

Four lamps are available suitable for use under the Coal and Other Mines (Safety-Lamps and Lighting) Regulations 1956. Type FS is a drawn steel lamp with brass fittings and Wolf magnetic lock, round wick with screw adjustment, to burn spirit, and with middle air-feed and shut-off ring. This is 8½ in. high and weighs 2 lb. 3 oz. The Type FE is similar, but has fittings for igniting electrically. It is 11 oz. heavier than Type FS. Type FC is equipped with a self-contained cerium relighter. Type FC weighs 3 lb. The Type FB is a drawn steel lamp with brass fittings and Wolf magnetic lock, round wick with screw adjustment, to burn spirit. With middle air-feed and shut-off ring and with self-contained hot filament relighter energized by small dry batteries of standard type. It is 9 in. high and weighs 3 lb.

The manufacturers' Airturbo lamps Nos. 0444/U and 0445/U are approved for use in mines under Coal Mines (Lighting) General Regulations 1947, Regulation No. II. The Wolf Airturbo lamp is a compressed air-driven turbo-alternator of simple design and exceptionally robust construction, with bronze turbine wheel, six-pole cobalt steel magnet and nickel-plated brass housing. It is the safest, simplest, and strongest compressed-air-driven mine lamp ever made.

In these lamps of safety type, safety without moving safety devices is obtained by the simple process of causing the compressed air from the main to pass inside the well glass or reflector

head before it enters the housing to drive the turbine wheel. The compressed air enters the lamp through the connecting tube provided with it, passes through the filter and automatic pressure regulator direct to the well glass (or reflector head) through perforations around the edge of the reflector surrounding the bulb. Thence it passes direct to a nozzle in the housing and, after impinging on the turbine blades, escapes through exhaust ports round the housing in such a way that a curtain of exhaust air is formed which surrounds the outside of the well glass. If air leaks due to faulty washers or a loose fitting or broken glass or if an attempt is made to remove the glass while the lamp is running, the air supply to the turbine wheel is cut off but air continues to flow round the bulb until the supply is turned off at the main. In this way if glass and bulb are both broken and there remains, momentarily, a glowing filament, it is impossible for an ignitable gas mixture to reach the filament.

An advantage resulting from the Wolf reversed air system is that if the air is dirty, wet or greasy some of the objectionable elements are first deposited in and on the glass and are clearly visible. If the glass is unduly obscured by such deposits, the supply is obviously bad for all the machines it serves and a filter and/or water trap should be used.

Wolf Airturbo lamps can be set to work at any pressure between 40 and 100 lb. p.s.i. The pressure regulator incorporated in the housing at the point where the compressed air supply from the main is connected regulates the air pressure to cover fluctuations of approximately plus or minus 5 lb. p.s.i. and prevents over-running of the bulb if there is a sudden increase in air pressure while the lamp is in use.

## Equipment Digest

In treatment processes used in the Orange Free State, Grade BH Permalin densified wood laminate is reported to have been selected as a suitable material for the construction of the frames used in the treatment of waste water by electrode analysis. This follows intensive research into the problem and testing of other materials such as natural wood, perspex and glass fibre.

★

A new hydraulic coal combine, remotely operated and said to be 20 times as efficient as existing machines, is being tested at a mine in the Lugansk region of the Ukraine. According to a story in *The Moscow News*, the combine's capacity is 100 to 130 t.p.h. and does away entirely with human labour, except for the remote control operator. Said to be particularly useful in thin seams, the combine has tracks and moves along the seam at a speed of 100 m. per hr. In contrast to other machines this combine hews the coal by means of the frontal method, using its three powerful cutting parts. Coal hewn by the machine is water-flushed to special ditches from which it is brought to the chamber of the hydraulic hoisting mechanisms.

A new primer-initiator, said to be safer, surer and more economical than high-explosive primers, has been developed by the Propellex Chemical Div., of the Chromalloy Corp., United States. Designed specifically for ammonium-nitrate-fuel oil blasting agents, the Saf-T-Boost initiator, Model 151, requires no tying, splicing or taping and is suitable for decking, stemming or any other blasting technique. Economical to use, according to the company, the primer, plus 29 lb. of ammonium-nitrate-oil mixture, can replace a 30 lb. dynamite primer for less than half the cost, with equal or better results. In addition to being cheaper and safer than other primers, the Saf-T-Boost initiator is said not to be troubled by hypersensitivity at freezing temperatures. The new primer weighs only 18 oz. and is 3 in. in dia. by 2 in. high. Though small, the Model 151 delivers a detonation velocity of over 20,000 f.p.s.

★

Aluminium Co. of America reports an all-aluminium mining car, the initial unit of an order being produced by Irwin-Sensenich Corporation, Irwin, Pa., has gone on the rails at a West Virginia bituminous coal property. Alcoa said the car has excellent resistance to corrosive materials found in mining areas.

The car weighs 4,900 lb. compared to 9,950 lb. for a comparable steel car, and will carry seven times its weight in payload, allowing mine locomotives to move considerably larger trains. The car has an estimated service life of 20 years, 5 to 10 years longer than the average steel car.

★

The Dowty Roofmaster self-advancing system of roof control is now in operation at Zabrze Colliery in Poland. The Roofmaster has been installed on a face 60 in. high and 240 yd. long, in conjunction with a 125 h.p. shearer and an armoured conveyor. Installation commenced in late January, 1960, and was completed in only fourteen working shifts by eighteen men, including two Dowty service engineers. Since the Roofmaster was installed, output has risen to an average of 23.5 tons per manshift, with a maximum of 41.6 tons per manshift, giving an output of about 1,650 tons clean coal per day. Prior to the installation of self-advancing support equipment, using friction props with the Donbass wide buttrock power loader, the face output was 5.5 tons per manshift. This represents a fourfold increase in o.m.s.

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# MINING MISCELLANY

The Mineral Resources Development Corporation has announced its intention of reopening the Kalewa coal mine in Burma with technical assistance from Western Germany. There is claimed to be the prospect of producing some 300 tons of good quality coal monthly.

★

According to the *American Metal Market*, sales of aluminium ingot to China now constitute a large and increasingly important part of total Canadian exports to that country. In the first six months of 1960 Canada exported to China goods totalling \$15,000,000 compared with exports to that country in 1959 of goods worth \$11,000,000. Much of the increase is accounted for by sales of primary aluminium.

★

The Government of Burma has sought assistance from the United Nations Special Fund in obtaining the services of a team of mining experts to survey and recommend conservation measures for the Bawdwin silver and lead mines. At the current rate of extraction, using the richest ores, the mine is not likely to last for more than 15 years, but the government hopes that it will be possible to prolong its life to 30 years by exploiting the less rich in conjunction with the richer ores.

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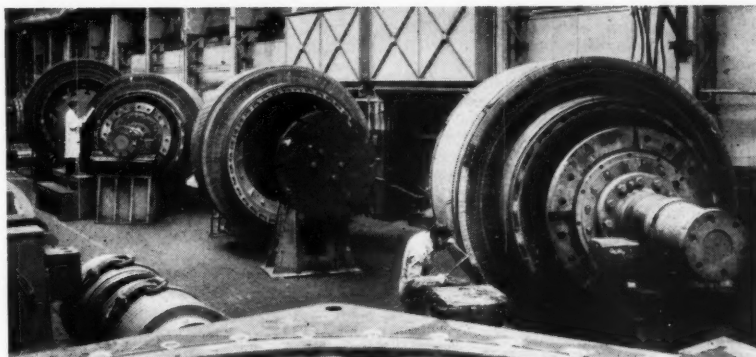
The Tanganyika Meerscham Corporation has reported the sale to Britain of over 30,000 meerscham pipes, made in Nairobi, Kenya, during the last 14 months, from material produced at the corporation's mine on the Kenya-Tanganyika border.

★

Pacific Island Mines in Papua, has reported extensions to three lodes being prospected on Misima Island. Some 15,000 ft. of costeaning has been done and continued testing in the oxidized zones has shown a combined length of the lodes to be about 2,700 ft. The exposed widths vary from 5 ft. to 45 ft. The three lodes are estimated to contain a prospective tonnage of 200,000 to 300,000, the bulk of the gold being free, with minor quantity in various base metal sulphides. Underground exploration has commenced and a pilot plant is to be built for testing values.

★

A shipment of copper concentrates from the Matahambé Mine in Cuba to American Metal Climax Co., estimated at \$1,000,000, was cancelled recently without explanation by the Cuban administrator who has been running the mine since it was nationalized earlier this year. Company officials said it was possible that the cancellation of the 4,500 ton shipment might have been because American Metal Climax had no longer advanced Cuba payment for concentrates since nationalization of the mine in Pinar del Rio. Before nationalization the company had paid for each shipment well in advance, to give the Cuban company which owned the mine enough working capital, but this practice had been discontinued since the Castro Government took over the mine. The Cuban Government had asked the company to continue smelting and refining the concentrates.

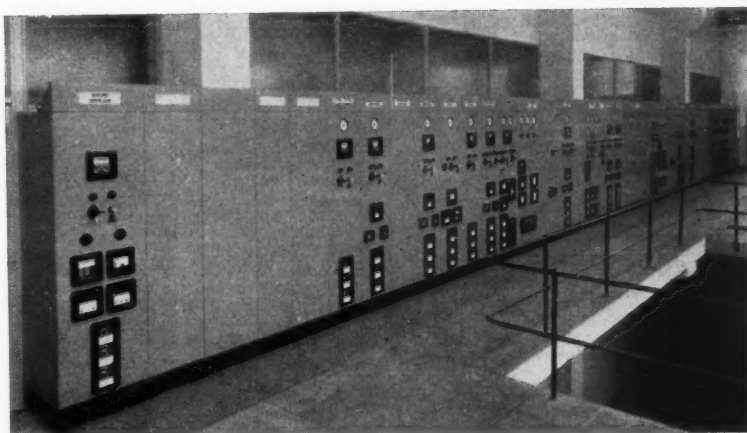


These armatures for large electric motors are under construction at the Stafford works of English Electric. The three in the foreground are for the new steel rolling mills of Colvilles Ltd., and the fourth is for a mine winder for the Stilfontein Gold Mining Corporation, South Africa

The largest drill in South Africa is being used by the Iron and Steel Corporation of South Africa (Iscon) in the country's largest underdeveloped coalfield at Ellsras, 60 miles north of Thabazimbi, where reserve tonnage of bituminous and coking coal amounts to many thousands of millions of tons. The Iscon drill, used in soft formations only, can drill a 13 in. dia. hole to a depth of 1,000 ft. and extract a core 10 to 11 in. dia. Each drill crown is reported to contain approximately 2,000 industrial diamonds and costs about £850.

Western Aluminium N.L., has established the existence of a large bauxite deposit in the Darling Ranges of Western Australia. Two years' drilling has revealed 37,000,000 tons of bauxite with a grade of 37 per cent alumina, of which 13,000,000 has a grade of 47 per cent. Tests on small scale lots proved satisfactory, and three shipments of 1,000 tons each have been made to Japan, with the possibility of a substantial export programme. Drilling to open-cut coal as a basis for power is proceeding in the Collier-Wilga district.

Crompton Parkinson Ltd. have supplied a large quantity of metal clad switchgear for use at the N.C.B.'s Agecroft Colliery. The establishment of Agecroft is part of the Board's national plan to maintain the output of Lancashire coal after the closure of spent and uneconomic pits. The switchgear supplied comprises mainly a 23-unit ALA 1 switchboard 11 kV, 250 MVA, single busbar, together with a 15-unit ALA 1 3.3 kV, 50 MVA, duplicate busbar switchboard and an associated 24-unit remote control board housing the control, instrumentation and protection equipment, with a mimic diagram showing the 11 and 3.3 kV and the L.V. distribution systems. Agecroft Colliery is the modern successor to an old colliery of the same name which was closed in 1932. It will have cost about £8,500,000 on completion and the N.C.B. outline plan under which it was designed foresaw an annual output of 876,000 tons when the colliery was fully operational. Output is planned to rise to 3,500 tons per day around 1963. Workers will be transferred to Agecroft from the nearby uneconomic Wheatshaf and Newton pits, which will be closed down



To keep pace with the great expansion of its operations, the Broken Hill Proprietary Co., has been intensifying prospecting activity, during the last three years, particularly in Constance Range, in north-west Queensland 100 miles south of the Gulf of Carpentaria. Expenditure so far is about £A.300,000, but more deep drilling and exploratory work is necessary before the tonnage and value of the deposit can be assessed. So far, the company has completed 700 miles of access roads and 52,000 ft. of drilling, and has three airstrips and three well equipped permanent camps. Underground mining will be necessary, and drilling may be carried out to 1,500 ft. At Yampi Sound, Western Australia is preparing the Koolan Island deposit for large scale production and in the Middleback Ranges, South Australia, the Iron Baron deposit is being prepared for quarrying. Work by the Western Australian Government, directed towards the state's hoped-for export of iron ore, is reported to have disclosed 41,000,000 tons of inferred ore in four lodes in the Bungalpin-Walton District.

New Mylmaque Explorations Co. has completed arrangements with Koppers of Canada and Strategic Materials Corp. for the construction of a smelter to produce pig-iron by Strategic's direct production process. The smelter will be about 12 miles west of Kingston, Ontario, and should be completed by the middle of 1962. Reserves are said to be sufficient for at least 50 years at planned rates.

Mexican investors are negotiating the purchase of the second largest mining company in the country, Minera de Penoles, at present owned by the American Metal Climax Co. It is reported that purchase can be regarded as virtually completed. Indeed, the Minister of National Property made such a statement when he announced that new mining laws would be presented to Congress to "Mexicanize" and industrialize mining and defend Mexico from the adverse effect of foreign quotas and duties. The Minister said also that a zinc plant is to be built at Saltillo.

In connection with the article, "Cutting Evaporation Losses on Reservoirs", which appeared in our

issue of September 16, 1960, our attention has been drawn to a recent report in the *Soviet Weekly*, to the effect that Lake Sevan in Armenia is to be covered with a chemical film to prevent evaporation, following experiments which showed that a special oily solution was harmless to fish and other water life. The film is easily penetrated by rain. The report states that Lake Sevan has been shrinking since a cascade of hydroelectric power stations went into operation on the River Razdan. It is believed that the chemical film can reverse the process, and the lake will then provide sufficient water to increase the generation of electrical power and irrigate fertile lands in the foothills. We understand that several methods for overcoming shrinkage of the big lakes have been discussed in Russia.

A team of Japanese experts including representatives of Yawata and of Kinoshita, are having discussions in Perth with Mineral Mining and Exports Ltd. on the setting up of a sponge iron plant in Western Australia to utilize local low grade limonite ore.

Three contracts for coal preparation plants have been awarded to the Chesterfield branch of Birtley Engineering. The total value is about £1,000,000. The contracts are for plant at the Kellingley, Cadley Hall and Brookhouse collieries. All will be of the tromp dense medium type for which Birtley has U.K. licence.

Japanese ferro-alloy producers are importing more Australian manganese ore this year. A spokesman for the Japan Ferro-Alloy Manufacturers' Association said that Japan's imports of manganese ore from Australia were likely to increase to 40,000 tons during the present financial year ending March 31, 1961, from 17,000 tons in the last financial year. This would account for about 15 per cent of the estimated total imports of manganese ore into Japan in the current financial year. Australia would rank only second to India, which was covering more than 50 per cent of Japan's manganese ore imports. Last year, Australia was the fourth largest supplier of manganese ore to Japan, after India, Indonesia and the Soviet Union.

Ore imports from Indonesia and the Soviet Union will not increase this year. The increase in the imports of Australian manganese ore was attributed by the spokesman to larger output in Australian mines, a higher manganese and lower phosphorous content of the Australian ore, and stable export prices. Import contracts for Australian ore concluded by Japanese importers this year amounted to 39,600 tons.

The Humboldt Mine, Michigan, U.S., has opened a 650,000 annual ton pelletizing plant, producing high-grade iron ore pellets from Michigan's comparatively low-grade "jasper" rock. The Humboldt Mining Co., pioneer producer of jasper concentrates in the Upper Peninsula of Michigan, is owned jointly by the Cleveland-Cliffs Iron Co. and Ford Motor Co. This development of a high iron content ore from the vast low grade reserves of the Lake Superior region offers the prospects of economic rebirth for the area. The work at Humboldt indicates an area for future research and development of a potentially vast domestic supply for U.S. blast furnaces. In effect Humboldt is converting deposits heretofore considered as nothing but country rock into iron ore reserves. Openpit operations first began at the Humboldt Mine in 1954 when the original concentrator was built. It had a capacity of 325,000 tons of concentrate per year, improving the iron content of the hard, iron-bearing rock from worthless material to valuable blast-furnace feed. Now, with capacity doubled, the Humboldt Mine can produce the concentrate in pellet form.

Following consultations between the Government of the United Kingdom and the Federation of Nigeria, it has been agreed that an industrial development conference will be held in Nigeria under their joint auspices in the latter half of January, 1961. The Federation of British Industries has agreed to form the United Kingdom delegation, which will be led by Sir Norman Kipping, Director-General of the Federation. The names of the other members of the delegation will be announced shortly. The purpose of the conference will be to enable the United Kingdom representatives to gain a closer understanding of the plans of the Nigerian Government for the development of its economy following independence and to explore ways in which private United Kingdom companies, both new to the country and already established there, can contribute to the expansion of industry.

In a recent address to the U.S. Permanent Magnet Producers' Association in Chicago, Dr. F. Morral, a member of the Cobalt Information Centre, stated that, despite the Congo situation and the loss of the prospect of supplies from the Moa Bay plant in Cuba, concern over future supplies of cobalt was unwarranted. Even if the worst imaginable could occur, he said, and world events should cause cobalt production to drop drastically for the next five years, there was an abundant supply of this metal in surplus stocks and stockpiles to feed industry at its present rate. Meanwhile, plants now closed in the U.S. and Canada could be reactivated.

## President of Sandviken in Britain

Mr. Wilhelm Haglund, president and general manager of Sandvikens Jernverks Aktiebolag, Sandviken, Sweden, greeted the Press in London on Tuesday this week. Mr. Haglund urged the "building of a bridge" in European trade relations between the Outer Seven and the Inner Six, and added in this connection that Sandviken was now an integrated organization able to exercise cost and production control from mine to finished article.

With reference to Sandvik Coromant tungsten carbide products, it is of interest that the company's main product in this field comprises the established rock drill steels with tungsten carbide tips, and cutting tools. Indeed, the Sandvik tungsten carbide factory is the second

or third largest in the world, and in so far as rock drill steels and bits are concerned the company claims to be the largest supplier in the world. To a great extent, of course, this situation has been achieved by the close co-operation that exists between Sandvik and Atlas Copco.

Sandvik rock drill steels are now manufactured in Sweden, South Africa, Canada and Brazil, and a new factory is being built in India. Coromant equipment is sold to all industrialized countries of the world. During the current year the company will have a total turnover of approximately £30,000,000.

Mr. Haglund became managing director of Sandvikens Jernverks, Aktiebolag A.B. in 1958.

## Metals and Minerals

## Prospects for S. Rhodesian Chrome

According to the Department of Mines, Southern Rhodesia's chrome sales are due for a record year in 1960, but conditions generally are mixed. The greater part of the tonnage being exported comes from the larger "captive" companies who sell their produce direct to parent companies in the U.S., and, to a lesser extent, Canada and Norway. Smaller producers, and those on the "North Dyke" deposits about 150 miles N.W. of Salisbury, report that, due to the long rail hauls to Beira and Lourenco Marques, and also to high production costs, they cannot compete price-wise with similar grades from, for example, Turkey. Selukwe Mines, however, enjoy better markets for their hard lumpy metallurgical grades than other producers, who mine mainly a predominantly friable metallurgical grade chromite.

In 1959, Southern Rhodesia produced 618,800 s.tons of chrome, of which 278,800 or 45 per cent were from Selukwe. The North Great Dyke produced 140,000 tons (39 per cent), while the other 16 per cent was made up of 73,000 tons from the Central Great Dyke, 4,000 from the Lower Great Dyke, and 18,000 tons from Belingwe. The percentages are reported to be about the same this year.

The industry has been operating under depressed conditions for about three years; although a recovery is

anticipated, it is not expected to come about in the foreseeable future. The greatest competition for Rhodesian producers comes from Turkey, which has benefited from barter agreements with the U.S. and which has enjoyed government assistance.

Costs are higher in the North Great Dyke area, where a seam is worked, whereas around Selukwe extensive deposits of massive chromite occur, with the result that prices from that area are more competitive in the world market.

Last year, sales of Southern Rhodesian chrome amounted to 543,000 s.tons and it is predicted that this year they could rise to a possible 660,000 s.tons on a pro-rata basis. This would compare with the previous record of 654,000 tons in 1957 and with the low-point of 449,000 tons in 1956. However, the value of sales is unlikely to show a corresponding rise. This year, the f.o.b. Baltimore price for Rhodesian 48 per cent 3 to 1 ratio stands at \$35.70—\$36.25, compared with \$47 in 1958. The present price, however, is described as nominal.

The Southern Rhodesia Department of Mines is at present embarking on a publicity campaign for Rhodesian material. According to the Department, Rhodesia has the largest reserves of metallurgical grade chromite in the world and production could be doubled if markets were forthcoming.

A Department of Mines report on the industry states that, despite the production of nearly 10,000,000 tons since output started in 1907, reserves have not been materially affected and are for all practical purposes unlimited. The Department states that the industry is able to supply in quantity all grades of chromite as used in the world today, namely top quality hard lumpy and friable metallurgical ore and concentrates, chemical ore and concentrates, and refractory grades.

## HIGHER CADMIUM PRICE

On October 3, price of cadmium of U.S. origin in the U.K. was raised to 11s. per lb. This follows American Smelting and Refining Co.'s announcement last week of a 10 c. increase in the U.S. price, from \$1.50 to \$1.60 per lb. Asarco's lead was followed by Udyline Corp., of Detroit, a leading U.S. supplier of cadmium, plating chemicals and equipment. Early in January the U.S. price was advanced from \$1.40 to \$1.50.

The latest increase was attributed to rising demand and low inventories. Cadmium is used in electroplating, pigments, alloys and chemicals, and plating demand has been particularly active. Another factor influencing the increase was that for some months exports have been heavy and imports light.

A report issued by the Bureau of Mines, U.S. Department of the Interior, states that stocks of cadmium metal in the U.S. declined by 107,000 lb., or 4 per cent, in the second quarter of 1960. Primary and secondary cadmium metal production in the second quarter of 1960 totalled approximately 2,800,000 lb., being 8 per cent higher than in the first quarter of 1960 and 28 per cent above the second quarter of 1959. Shipments of cadmium metal by producers, including internal plant consumption, totalled 3,000,000 lb., a decrease of 13 per cent from the first quarter. Metal producers', compound producers' and distributors' stocks of cadmium metal declined by 4, 1 and 8 per cent respectively. At the end of June they aggregated 2,598,286 lb. General imports of cadmium metal decreased by 3 per cent, to 235,038 lb., but flue dust imports rose from 102,087 to 397,650 lb. (contained cadmium). Exports fell by 2 per cent.

The U.K. obtains nearly as much cadmium metal by producers, including Commonwealth sources, Asarco being a major supplier. Consumption in this country has also been at a high rate. According to the British Bureau of Non-Ferrous Metal Statistics, total consumption during the six months ending June 30, 1960, amounted to 682.10 tons, compared with 505.00 tons in the corresponding period last year.

## QUICKSILVER NOW £70

The London ex-warehouse quicksilver price is now indicated at £70 per flask compared with £69 previously. Because of the immobilization of shipping through the strike of tally clerks at London docks, there is reported to be a much reduced availability of physical supplies on the spot. This rise in quotations is the first reversal of the downward trend which has characterized the London warehouse price for several months.

## LONDON METAL AND ORE PRICES, OCT. 6, 1960

## METAL PRICES

|  |  |
|--|--|
| Aluminium, 99.5%, £186 per ton                         | Magnesium, 2s. 2½d./2s. 3d. lb.          |
| Antimony—  | Manganese Metal (96%/98%) £275/£285      |
| English (99%) delivered, 10 cwt. and over £20½ per ton | Nickel, 99.5% (home trade) £600 per ton  |
| Arsenic, £400 per ton                                  | Osmium, £18/£22 oz. nom.                 |
| Bismuth (min. 1 ton lots) 16s. lb. nom.                | Osmidium, nom.                           |
| Cadmium 10s. 6d. lb.                                   | Palladium, imported, £8 12s. 6d.         |
| Cerium (99%) net, £15 0s. lb. delivered U.K.           | Platinum U.K. and Empire Refined £30 5s. |
| Chromium, Cr. 99% 6s. 11d./7s. 4d. lb.                 | Imported £28½/28½                        |
| Cobalt 12s. lb.  | Quicksilver, £70 ex-warehouse            |
| Germanium, 99.99%, Ge. kilo lots 2s. 5d. per gram      | Rhodium, £43/£45 oz.                     |
| Gold, 250s. 9d.  | Ruthenium, £14/£16 oz. nom.              |
| Iridium, £20/£23 oz. nom.                              | Selenium, 50s. 0d. per lb.               |
| Lanthanum (98%/99%) 15s. per gram.                     | Silver, 79½d. f. oz. spot and 79½d. f'd  |
|  | Tellurium, 28s. 6d. lb.                  |

## ORES AND OXIDES

|   |  |
|---|--|
| Antimony Ore (60%) basis .. .. .  | 21s. 0d./22s. 0d. per unit c.i.f.  |
| Beryl (min. 10 per cent BeO) .. .. .  | 220s./230s. per 1. ton unit BeO  |
| Bismuth .. .. .   | 65% 8s. 6d. lb. c.i.f.   |
|   | 18/20% 1s. 3d. lb. c.i.f.  |
| Chrome Ore—   |  |
| Rhodesian Metallurgical (semifriable 48%) (Ratio 3:1) .. .. .                   | £15 5s. 0d. per ton c.i.f.   |
| " Hard Lumpy 45% .. .. . (Ratio 3:1) .. .. .                                    | £15 10s. 0d. per ton c.i.f.  |
| " Refractory 40% .. .. .  | £11 0s. 0d. per ton c.i.f.   |
| " Smalls 44% .. .. . (Ratio 3:1) .. .. .  | £13 5s. 0d. per ton c.i.f.   |
| Baluchistan 48% .. .. . (Ratio 3:1) .. .. .                                     | £11 15s. 0d. per ton f.o.b.  |
| Columbite, Nigerian quality, basis 70% combined pentoxides (Ratio 10:1) .. .. . | Nb <sub>2</sub> O <sub>5</sub> : Ta <sub>2</sub> O <sub>5</sub> 170s./175s. per 1. ton unit c.i.f. |
| Fluorspar—  |  |
| Acid Grade, Flotated Material .. .. .   | £22 13s. 3d. per ton ex. works   |
| Metallurgical (75/80% CaF <sub>2</sub> ) .. .. .                                | 156s. 0d. ex. works  |
| Lithium Ore—  |  |
| Petallite min. 3½% Li <sub>2</sub> O .. .. .                                    | 50s. 0d./55s. 0d. per unit f.o.b. Beira  |
| Leptidolite min. 3½% Li <sub>2</sub> O .. .. .                                  | 50s. 0d./55s. 0d. per unit f.o.b. Beira  |
| Amblygonite basis 7% Li <sub>2</sub> O .. .. .                                  | 75s./85s. per ton f.o.b. Beira   |
| Magnesite, ground calcined .. .. .  | £28 0s./£30 0s. d/d  |
| Magnesite Raw (ground) .. .. .  | £21 0s./£23 0s. d/d  |
| Manganese Ore Indian—   |  |
| Europe (46%-48%) basis 60s. 0d. freight .. .. .                                 | 73d./75d. c.i.f. nom.  |
| Manganese Ore (43%-45%) .. .. .   | 69d./71d. c.i.f. nom.  |
| Manganese Ore (38%-40%) .. .. .   | 8s. 11d. per lb. (f.o.b.)  |
| Molybdenite (85%) basis .. .. .   |  |
| Titanium Ore—   |  |
| Rutile 95/97% TiO <sub>2</sub> (prompt delivery) .. .. .                        | £29 0s. 0d. per ton c.i.f. Aust'n  |
| Ilmenite 50/52% TiO <sub>2</sub> .. .. .  | £11 10s. per ton c.i.f. Malayan  |
| Wolfram and Scheelite (65%) .. .. .   | 154s./159s. per unit c.i.f.  |
| Vanadium—   |  |
| Fused oxide 95% V <sub>2</sub> O <sub>5</sub> .. .. .                           | 8s./8s. 11d. per lb. V <sub>2</sub> O <sub>5</sub> c.i.f.  |
| Zircon Sand (Australian) 65-66% ZrO <sub>2</sub> .. .. .                        | £16/£16 10s. ton c.i.f.  |



## CUBA TAKES OVER NICARO

At the end of September the State Department in Washington announced that the Nicaro nickel plant in Cuba, owned by the U.S. Government, was being closed. The decision was ascribed to "harassment" by the Cuban Government, coupled with the imposition of "confiscatory" taxes. No nickel, it had been announced by the Cuban Government, could be exported without payment of taxes. The plant, valued at

\$110,000,000, had formerly been processing about 25,000 stons of nickel a year.

Later, it was reported that the Cuban militia had occupied the Nicaro plant, preparatory to taking it over.

An announcement by the State Department at Washington said that there had been no offer from Cuba to buy the Nicaro plant since the rejection last month of a Cuban bid of just over \$5,000,000.

On Thursday the Eastern price was equivalent to £802½ per ton c.i.f. Europe.

## LEAD AND ZINC

The lead and zinc markets have remained reasonably active but it is apparent that dealers are wary of entering into commitments for January until they have more chance of assessing the possible results of the new L.M.E. contract. It is interesting to note that at the moment there is a contango between the end of December and January dates approximately equal to the warehousing costs, which means that whilst in the lead market there is a contango between now and the end of the year, in the zinc market there is a backwardation and this may be increased if the present dock troubles in the U.K. continue.

During August the O.E.E.C. countries produced 44,963 tonnes of lead as compared with 51,258 tons in July, and stocks at the end of the month showed an appreciable fall at 58,709 tons from the end July figure of 65,154 tons. Zinc production in August totalled 73,274 tonnes as opposed to 72,786 tons in July and total stocks showed an increase at 58,125 tons as compared with 51,980 tons at the end of July. These figures bear out the conclusions reached at Geneva in September and seem to indicate that for the rest of this year the position in lead will improve relative to that in zinc.

In the U.S., demand remains patchy and it appears that if the present atmosphere continues, difficulty may be experienced in maintaining the present prices. The tariff commission has advised the President that both U.S. tariffs on lead and zinc and the quotas imposed in 1958 should be maintained. The figures published for the third quarter show that whereas all quotas were filled for lead and zinc ore, there was a short fall in lead ore from Peru and from "other countries" whilst imports of zinc from Belgium, Italy and Mexico fell far short of the permitted total.

\*

The British Bureau of Non-ferrous Metals Statistics has issued preliminary figures for the consumption of metal in the U.K. during August and in 1960 these are (with the July total in parenthesis):

|        |     |        |          |
|--------|-----|--------|----------|
| Copper | ... | 49,100 | (46,306) |
| Lead   | ... | 28,735 | (27,913) |
| Zinc   | ... | 25,764 | (25,594) |
| Tin    | ... | 1,696  | (1,638)  |

Closing prices are as follows:

|                 | September 29 |         | October 6   |         |
|-----------------|--------------|---------|-------------|---------|
|                 | Buyers       | Sellers | Buyers      | Sellers |
| <b>COPPER</b>   |              |         |             |         |
| Cash            | £230½        | £231    | £223½       | £224    |
| Three months    | £232         | £232½   | £225½       | £225½   |
| Settlement      | £231         |         | £224        |         |
| Week's turnover | 8,875 tons   |         | 11,475 tons |         |
| <b>LEAD</b>     |              |         |             |         |
| Current ½ month | £68½         | £68½    | £66½        | £67     |
| Three months    | £69½         | £69½    | £68½        | £68½    |
| Week's turnover | 6,725 tons   |         | 11,275 tons |         |
| <b>TIN</b>      |              |         |             |         |
| Cash            | £804         | £804½   | £804        | £805    |
| Three months    | £801½        | £802    | £800        | £801    |
| Settlement      | £804½        |         | £805        |         |
| Week's turnover | 590 tons     |         | 770 tons    |         |
| <b>ZINC</b>     |              |         |             |         |
| Current ½ month | £87          | £87½    | £87½        | £87½    |
| Three months    | £85½         | £85½    | £87½        | £87½    |
| Week's turnover | 6,650 tons   |         | 4,350 tons  |         |

## COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

With the exception of the copper market, metal prices have remained fairly stable during the last week although the forward quotations for lead and zinc are no longer strictly comparable owing to the commencement of the new contract, as mentioned in last week's issue.

## WHO ELSE FOR COPPER CUTS?

The copper price suffered a severe setback on Monday when an unexpectedly large increase in L.M.E. stocks was revealed simultaneously with a report that a settlement seemed imminent to the Chuquicamata strike which had commenced during the weekend. Following this, news items became very conflicting in their influence on the market as, on the one hand the two Rhodesian companies announced that they were instituting a 10 per cent cut in availability to the market, whilst on the other hand the long awaited reduction in the U.S. customs smelter price took place from 33 c. to 31 c. Almost immediately afterwards it was learned that the settlement of the strike in Chile was still dependent upon the workers accepting, which subsequently they did not do.

To deal with these items in a little more detail, the stocks showed a rise of 894 tons, bringing the total to 10,027 tons. This further increase appears to have established fairly firmly a contango of about £2 per ton and, with the technical position of the market having entered a new phase, it seems unlikely that this figure will alter much in the near future.

The announcement of a cutback by the Rhodesian companies was not unexpected, but many observers point out that under present circumstances a cutback of such a size is inadequate to have any real effect, unless all other producers join in. Even if this were possible the resultant production would still probably exceed present consumption.

The Katanga producer has already indicated that no cutback can be envisaged under present conditions and it is considered that the financial situation in Chile will also prevent any cutback from that source. Meanwhile, the Belgian price has been cut from 29.25 c. to 28.8 c. per lb. Antwerp or New York.

A cutback in the U.S. would not really help the sterling market as at the moment price parities do not permit shipment eastward across the Atlantic. It seems probable that the only effective support which will be forthcoming for the Rhodesians will be from Canada.

Here again, the overall picture of the country's balance of trade may prevent it, although it has been announced that Noranda Mines is cutting back at a rate which will mean that in the second half of the year its production will be more than 5,000 tons less than in the first six months.

Finally, from the two announcements it would appear that whilst R.S.T. are prepared to cutback production, the Anglo American Group intend to rely, in the first instance, on withholding material from the market.

The situation in Chile remains very confused. After the workers turned down the Union's advice to accept the company's offer a new demand has been made and at the same time the company's offer has been reduced so that the two sides are still far apart. A more important development, however, is the news that the government might feel it is obliged to intervene in order to get the strikers back to work, and it seems possible that any such measures might be met by a strike throughout the whole of the Chilean mining industry, which could hardly avoid having an immediate effect on prices throughout the world.

The reduction of the customs smelter price in the U.S. was accompanied by a further reduction in the intake price for No. 2 scrap to 23½ c. per lb. which would indicate that if the London price continues to recede, a further reduction in the customs smelter price is likely. Dealer copper is still changing hands in the U.S. at under 31 c. per lb. and it is reported that metal for export is available at around 29 c. per lb. f.a.s. Demand in the U.S. is still running at an unsatisfactory level whereas elsewhere consumption seems to be maintaining its recent rate.

## TIN BASICALLY FIRM

Apart from one market of particular weakness in Singapore, the tin market has maintained its firm undertone, even though prices themselves have receded a little. Stocks fell by 18 tons last week to a total of 9,245 tons, but as most of this is in the hands of the buffer stock manager, there is still a shortage on the market, which results in the maintenance of the present backwardation.

Tin shipments from Penang in September totalled 6,237 tons against 8,268 tons in August and it will be interesting to see the tonnage shipped this month now that export quotas have been removed.



## Mining Finance

## Cautious Dividend from "Tanks"

Tanganyika Concessions have announced the expected higher profits for their financial year to July 31 and also, not completely unexpectedly, have decided to be conservative about their distribution. The final is 2s. 3d. per 10s. stock unit again making 3s. 9d. for the year. It absorbs £2,873,559 out of an available surplus, after the Preference dividend, of £4,304,196 against £3,246,423 a year previously. The balance of the profit is being put to general reserve which receives £2,500,000, an additional £1,000,000 being taken from the carry-forward which is reduced from £2,081,378 to £1,046,906. Apart from all this there is a profit of £813,640 on the redemption of Benguela Railway debentures less loss on the sale of shares. This has been credited to capital reserve.

The official reason given for the cautious dividend is that "having regard to events in the Congo and the need to satisfy demands arising from our existing investments in Africa as well as to make provision for the plans in new territories, the Board has

decided that the best interests of the stockholders will be served by maintaining the Ordinary stock dividend at the same level as last year."

The plans in new territories refer to the group's newly-founded timber business, first news of which came last January. A new company, Commonwealth Timber Industries, has been formed with a paid-up capital of £1,750,000. "Tanks" holds 60 per cent of the equity and has also undertaken to make loans for the company's expansion. C.T.I. has under consideration the advisability of erecting particle board plants using the Fahrni process in the U.K., Australia and India. At the moment this "Tanks" venture combines conifer forests on the eastern boundary of Southern Rhodesia with saw milling, box manufacturing, timber merchandising and particle board making in and around Port Elizabeth in South Africa.

At present, however, "Tanks" continue to rely for revenue on their stake in Union Minière, the big copper producer in the

Katanga district of the Congo, the accompanying mining royalties agreement and the ownership of the Benguela Railway which runs through the Congo to the west coast. The preliminary profits statement does not split up the 1959-60 sources of income but most of the earnings increase will have come from Union Minière owing to that concern's higher dividend of Frs. 2,200 for 1959 against Frs. 1,500 for 1958. In the present highly volatile state of affairs in the Congo it is little wonder that the "Tanks" directors are adopting a cautious policy. True, it is believed that copper production at Union Minière has actually been relatively little affected by the confused events of the past three months. But the company's future status under the new régime must remain very uncertain.

The unchanged dividend plus some tremors caused by a threat to nationalize Union Minière from one of the new African "statesmen" in Katanga took "Tanks" down to 30s. 3d. cum dividend to give a yield of close on 13 per cent. They are obviously very cheap if all goes well, but it is a mighty big "if" at the moment.

## LIFE ESTIMATES FOR SOUTHERN KINTA

Last week's comment on the preliminary results of Southern Kinta, the Malayan multi-dredge tin producer, ended with the sentence, "so a considerable question mark hangs over the company's life prospects". With commendable promptitude this question mark has now been removed by the chairman, Mr. J. Ivan Spens. In the full report he gives the following information about the various dredges on the basis of uninterrupted working.

The Bernam dredge is now installed on the northern part of the property where its life is estimated at 20 years. There should be another 15 years life here in low-grade ground for another dredge and Kinta No. 2 which will exhaust its present area in 1962, may be moved there. The Rasa dredge has about 11 years' life on its present ground. The Southern Kampar deep-digging dredge will exhaust its area in 1962, but it is hoped to reach an arrangement with an associated company for a new deep area with a long life to be worked on a profit-sharing basis.

Thus, Mr. Spens concludes, there is a "reasonably long life" for four dredges either already assured or in prospect. The other five dredges are of relatively small bucket capacity and of medium digging depth. No new ore reserves are in sight for these which will finish as follows: Kampar Malayan No. 1 in 1961, Kampar Malayan No. 2 in 1962, Kinta No. 1 and Penawat in 1963 and Kinta No. 3 in 1964.

The estimated cost of dredge removals has now been cut down to £825,000. Hence the proposed 2s. per share capital return which will absorb £384,800, net liquid assets at March 30 last being as much as £1,229,939. There will, of course, be some loss of profits while the two dredges are being transferred, but it looks as though Southern Kinta 4s. shares at 26s. 6d. cum. capital return to yield over 16 per cent on the 4s. paid for 1959-60 now deserve to lose some of the unpopularity which held them back during the strong forward movement in tins that started in mid-1959.

## BERALT OPENS UP NEW GROUND

Beralto also produces tin, but it is wolfram that provides this Portuguese property with its main source of revenue and the market for this particular metal can be subject to very large fluctuations. Thus in the year to

## LONDON MARKET HIGHLIGHTS

The perennial upsurge in Kaffirs, triggered off by gold price hopes engendered by the I.M.F. meetings, was abruptly halted on Thursday of last week by the official U.S. statement which held out no prospect of an early rise. The no-change signal led to a general marking down of prices, selling being only moderate but buyers almost completely lacking.

The O.F.S. group, after its recent advance, was particularly vulnerable. Among widespread losses Free State Geduld fell 6s. 10½d. to 128s. 9d., Western Holdings 4s. 4½d. to 138s. 9d. and "Ofsits" 2s. 6d. to 79s. 4½d. Loraine fell 1s. 3d. to the new 1960 low of 22s. Far West Rands also weakened, with West Driefontein 3s. 9d. down at 8s. 3d., Vaal Reefs (42s. 6d.) and "Writs" (50s.) 2s. 6d. lower. Doornfontein declined a further 1s. 6d. to the year's nadir of 25s. 6d. but has since regained 1s. Finance issues were not exempt from the general decline, Anglo American losing 5s. to 162s. 6d., Union Corporation 2s. 6d. to 63s., Gold Fields 2s. 3d. to 69s. and "Johnnies" 1s. 6d. to 51s. 6d.

Following the shakeout, Kaffirs became a firmer market and leading stocks soon recovered some of their previous losses. Bracken, however, at 26s. 6d. failed to respond to Tuesday's announcement of a good reef intersection in the 1A shaft. Despite Johannesburg's preoccupation over Referendum on the South African Republic—for which an extremely heavy poll has been reported—a pronounced revival took place on Wednesday, following renewed interest in North American gold shares in New York and Canada, which can presumably be attributed to further U.S. gold losses.

The upturn in London appears to have been a purely sympathetic movement, with little weight of buying. St. Helena was a particularly firm market, rising 1s. 6d. to 76s. on hopes of a good quarterly report.

Free State Geduld (130s.) and Western Holdings (137s. 6d.) were both 1s. 3d. better. Loraine rose 1s. 6d. to 23s. 9d., Johannesburg buying hoisting West Driefontein to 88s. 9d., a gain of 2s. 6d. Among the older mines, Durban Deep at 29s. and Dagga at 18s. 9d. both improved. In the finance list, Gold Fields (68s.) and Union Corporation (63s.) gained 9d. and 6d. respectively.

Following the satisfactory September diamond sales figures, De Beers became a firmer market, strengthening on Wednesday to 151s. 3d. ex dividend.

Optimism regarding the pending dividends was reflected by the firmness of copper shares early in the week. Despite the fall in the metal price Rhokana gained 1s. 3d. to 52s. 6d., Bancroft 1s. 1½d. to 19s. 3d., Rhodesian Selection 4½d. to 10s. 6d. and "Tanks" 1s. to 32s. 3d. In sympathy with "Tanks", Kentan gained 1s. 3d. to 23s. 9d. The announcement of the Anglo American and R.S.T. cutbacks, however, brought a more cautious view of dividend prospects which was reflected in an easier trend. Rhokana eased on Wednesday to 50s. 7½d. and R.S.T. to 10s. 1½d. Disappointment with the unchanged dividend led to offerings of "Tanks" which lost 1s. on Tuesday and a similar amount on the following day.

Tin continued to attract little attention and for the most part tended to ease in idle trading. Despite the chairman's encouraging statement on the reserve position, Southern Kinta (26s. ex dividend) did not escape the general dullness. At 6s. 9d., however, Chenderiang responded to the resumption of dividends. Nigerian issues were subdued by African politics. Beralto at 32s. ex dividend were unchanged despite the chairman's encouraging statement.

In an otherwise generally quiet lead-zinc market, Mt. Isa rose 1s. 6d. to 55s. 6d., reflecting an increase in the Australian price.

March 1959, the average market price was only 82s. per l. ton unit. In the year to March 1960, it was 125s. and the present price is 155s.-161s. So in 1959-60 Beralt stepped up its output of wolfram concentrates from 1,280 tons to 1,886 tons and is keeping up a high rate of production in the current year, the total for the first six months being 1,024 tons. But tin output in this period has been only 32 tons against 241 tons for the whole of 1959-60 and 642 tons for the year before that.

It is stated that, with the market revival, renewed emphasis has been placed on preparing the south-western section of the main mine for future wolfram production. Continuity of the vein system over a large area previously unworked is indicated and the existence of substantial additional ore reserves above the No. 1 level has been established.

On the tin side, work at Vale da Ermida has been discontinued, but the possibility of large-scale opencast working at Argimela is still being investigated. Much remains to be done before it will be possible to decide whether the heavy capital outlay that this would entail would be justified.

Beralt continues to maintain its strong financial position, net liquid assets working out at 13s. 8d. per 5s. unit which are quoted at 32s. ex dividend to yield 9.4 per cent on the 60 per cent distribution. It is worth remembering that even in bad times the company has been able to remain in the dividend list owing to its ample cash resources. And it should be doing very well indeed in the current financial year.

#### WAGE INCREASE IMPACT ON ASHANTI

There was something of a sigh of relief in the West African gold share market when the September return of Ashanti Goldfields was announced, because it contained the first company assessment of the effect of the statutory wage increases imposed by the Ghana Government throughout that country's industries as from July 1 last. And the impact was not quite so bad as had been feared.

Ashanti puts the extra cost at £24,500 for the three months and after allowing for this its working profit before tax in the year to September 30 comes out at the new record of £1,753,970 against the previous peak of £1,574,984 in 1958-59. This should not necessarily be taken as an indication of a higher dividend because of capital expenditure and extra tax requirements. But it certainly underpins the current 2s. dividend basis which gives the 4s. shares at 17s. 9d. a yield of 11.3 per cent.

The wage increase is close on £100,000 on an annual basis and, although Ashanti is rich enough to absorb this, it looks as though it will be quite a blow to a marginal concern such as Amalgamated Banket.

#### TINTO'S URANIUM PLANS REVISED

Rio Algom, the new company which now runs the Rio Tinto group's Canadian uranium operations, has given further proof of its intention to remain flexible in its plans for meeting the new stretched-out government contracts for the metal in the most economic way possible. Following the acquisition of Stanleigh Uranium it is announced that instead of the Nordic and Quirke mines being the two long-term producers it has been decided to close down the last-named and substitute Milliken.

Thus the position now is that Stanleigh will close at the end of November and

Quirke at the end of the year. The Panel mine will continue to operate until about the middle of 1961. Thereafter Nordic and Milliken will produce the group's uranium and operations are stated to be scheduled well ahead. If additional contracts are acquired, "either from other mines or from developing civilian demand", then the production schedules will be further revised accordingly.

One of the advantages of this latest arrangement is that the new shaft on the Quirke property will not be necessary and the high-grade reserves in the area that it was to open up will be left intact. Rio Algom shares have been quite a firm market since dealings started in them in July. In London they have risen from \$11½ to \$14.

#### RISE IN INDUSTRIAL DIAMOND SALES

The diamond sales figures published by De Beers Central Selling Organisation for the third quarter of the year are notable for a marked increase in the sale of industrial stones. This increase presumably is in the main a reflection of precautionary stocking-up in face of the uncertainties surrounding future mining operations in the Kasai Province of the Congo, which has been the scene of heavy tribal fighting resulting in the complete shutdown of mining operations in an area which provides between 60 and 70 per cent of total world requirements of industrial board. No doubt an expanding production of synthetic board and withdrawals from the American stockpile will help to cushion this shutdown and there is in any case a general feeling in the market that producer stocks are sufficient for at least another few months of normal offtake. Nevertheless the situation is one which must begin to cause anxiety if the stoppage becomes prolonged.

| Quarter      | Gem<br>(£m.) | Industrial<br>(£m.) | Total<br>(£m.) |
|--------------|--------------|---------------------|----------------|
| 1959         |              |                     |                |
| March..      | 15.9         | 7.7                 | 23.6           |
| June ..      | 14.8         | 6.8                 | 21.6           |
| September .. | 16.9         | 6.3                 | 23.2           |
| December ..  | 15.4         | 7.3                 | 22.7           |
| 1959 TOTAL   | 63.0         | 28.1                | 91.1           |
| 1960         |              |                     |                |
| March ..     | 14.0         | 6.4                 | 20.4           |
| June ..      | 17.2         | 6.1                 | 23.3           |
| September .. | 15.8         | 6.8                 | 22.6           |
| 1960—9 mths. | 47.0         | 19.3                | 66.3           |

#### BRACKEN SHAFT STRIKES THE REEF

Bracken Mines has not been far behind the adjoining Leslie in reaching the reef for the first time in one of its shafts. And the values exposed confirm the impression given by the original drilling programme that anyway for a considerable part of its property Bracken may be the richest of the three mines so far formed in this new eastern extension of South Africa's Rand. The reef was cut in the 1A shaft at a depth of 2,336 ft. Sampling round the entire perimeter yielded average gold values of 23.3 dwts. a ton over a width of 37 inches, equal to 863 inch-dwts. The initial Leslie strike gave 453 inch-dwts. At Winkelhaak, the producing member of the trio, ore reserves opened up so far have averaged 408 inch-dwts.

Both Leslie and Bracken are, of course, a long way off the production stage yet. Reef development from their shaft systems is unlikely to get under way on a serious scale until next year. But the signs are promising and the two newcomers will have the benefit of the experience of the first mine,

Winkelhaak, especially as all three concerns are under the same technical direction, that of Union Corporation. Winkelhaak's September profit was a new high record at £175,062 and last month the company declared a maiden dividend of 4d. a share.

**North Broken Hill Preliminaries.**—Profit from mining operations at North Broken Hill for the year ended June 30, 1960, amounted to £1,144,000 (£848,000) in the year to June 1959. After providing £25,000 (same) for depreciation, £60,000 (£28,000) for royalties and £343,000 (£197,000) for tax, there was an operating surplus of £623,000 (£517,000). Investment income provided a further £627,000 (approximately unchanged). On the 1958-59 operations dividends totalling 5/6d. were paid on the basis of the old 5/- stock unit absorbing £770,000. An interim of 2/6d., also on the old stock unit, has so far been paid in respect of 1960 equivalent to £350,000.

**New Goldfields Interest.**—The Consolidated Gold Fields of South Africa has acquired (for a cash consideration which does not exceed £250,000) an interest of just over 50 per cent in the equity capital of Mining and Metallurgical Agency Ltd. which acts as European selling and purchasing agents and general representatives for a number of important overseas mining companies, as well as carrying on a merchant business in ores and metals.

**Zinc Corporation.**—The Consolidated Zinc Corporation Limited announces that, with the consent of H.M. Treasury, the central management and control of its wholly-owned subsidiary The Zinc Corporation, Limited has been transferred to Australia with effect from October 1. The Zinc Corporation operates an important lead-zinc-silver mine at Broken Hill, New South Wales, and the transfer of control will enable it to derive the full benefits of local direction and management.

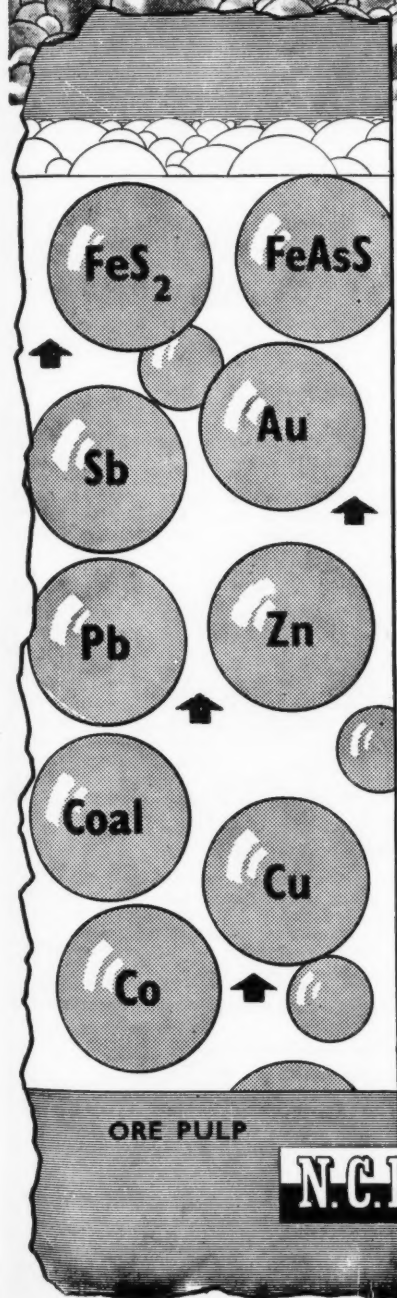
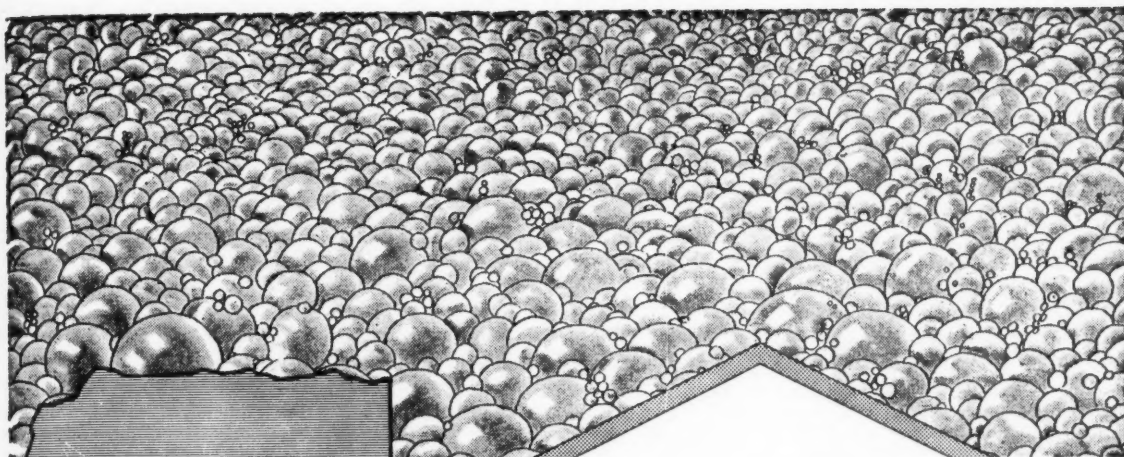
**Clutha River Pays Same.**—Preliminary figures for Clutha River Gold Dredging indicate a net profit after tax for the year to March 31 last of £5,025 (£3,864). The dividend is to be maintained at 1d. per share absorbing £5,104. It will be recalled that during the financial period covered by these figures the company made a further capital repayment of 3d. per share, the par value of which now stands at 1s. 5d.

Mr. E. F. O. Gascoigne has joined the boards and has become chairman of the following companies as from September 30 1960: Kentan Gold Areas Ltd., Tanganyika Holdings Ltd., The Zambesia Exploring Co. Ltd., and The Zambesia Investment Co. Ltd.

Dr. E. S. Hedges, director of the International Tin Council, left London last week on a short tour of France. He will be accompanied by Prof. van der Kerk, director of the Dutch Government's Institute of Organic Chemistry.

Mr. C. F. Grundy, managing director of the Cementation Group of Companies, left on Monday of this week for a 10 day business tour in India. He will visit Durgapur and Bombay.

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## KINTA KELLAS TIN

### A MORE SATISFACTORY YEAR

The 33rd annual general meeting of Kinta Kellas Tin Dredging Co. Limited was held on September 29 in London, Mr. T. H. Macer, M.C. (the Chairman) presiding.

The following is an extract from his circulated statement:

1959/60 was a much more satisfactory year for the Company, the gradual easing of the very severe restriction of output and the slightly higher prices obtained for our ore have resulted in a profit, after providing for taxation, of £20,852 as against only £1,628 for the previous year.

We have already paid an Interim Dividend of 5 per cent and, in normal circumstances, your Directors would have recommended payment of a Final Dividend of 10 per cent for the year to March 31, 1960. Payment of such a dividend, however, would have involved the Company in a substantial unrelieved liability to U.K. Income Tax. Your Directors, therefore, decided, that it was not in the best interests of the Company to recommend payment of a Final Dividend for 1959/60 but, instead, to declare an Interim Dividend of 10 per cent for 1960/61.

The dredge was closed down for only 65 days during the year compared with 218 days in 1958/59. The output was 276.60 tons of tin ore, permissible sales under the Tin Export Control, including quotas received from the Common Surrender Pool and the Osborne & Chappel Grouping Scheme, amounted to 223.83 tons, leaving a stock of tin ore surplus to quota of 95.90 tons, which is approximately the maximum amount the Company is permitted to hold. At the present time production of tin in Malaya is considerably below the amount which that country is permitted to export under the International Tin Agreement and the question of the orderly disposal of stocks of tin surplus to quota held on Mines is receiving active consideration by the Malayan Government. I am hopeful that during the latter half of the present year we shall be permitted to dispose of our surplus stock. Then, providing the price of tin remains at around the present level, and I cannot foresee any reason for it not doing so, the decision to operate the dredge in 1959/60 so as to produce the maximum amount of permissible stocks of ore will have been amply justified.

I referred in my last statement to the fact that the Company would qualify on July, 1, 1960, for a revision of its assessment. I am happy to advise that our assessment has been increased from 290 tons per annum to 344 tons per annum as from that date. The present rate of quota is approximately 95 per cent of the new assessment and, helped by allotments of quota from the Common Surrender Pool, I am hopeful that there will be no necessity for the dredge to be shut down in 1960/61 through restriction.

At present there are indications that 1960/61 will be a year of satisfactory profits for the Company but, with conditions almost back to normal, consideration now has to be given to capital works which had to be postponed during the period of restriction of output.

The report and accounts were adopted.

## KENTAN GOLD AREAS LIMITED

### MR. MICHAEL EASBY'S REVIEW

The Annual General Meeting of Kentan Gold Areas Limited was held on September 29, 1960, at The Chartered Insurance Institute, E.C.2. Mr. Michael Easby, F.C.A. (Managing Director) presided.

Mr. Easby referred to the grievous loss which the Company had suffered through the deaths of the Chairman, Mr. Christopher Holland-Martin, and of Mr. G. F. Webster, and announced that Mr. E. F. O. Gascoigne had accepted the Board's invitation to assume the Chairmanship as from September 30, 1960.

In his printed review Mr. Easby had reiterated that the group's principal asset was now its holding in Tanganyika Concessions Limited, which was vitally interested in the well-being of the mineral industry of Katanga, and he now emphasized that the prosperity of the group continued to depend on a satisfactory solution of the problems of the Congo, as to the outcome of which it was at present impossible to hazard any forecast. In the meantime the uncertainties of the situation had been substantially discounted in the current market price of the company's shares.

The consolidated accounts at March 31, 1960, reflected the first full year's working since acquisition of the entire share capital of The Zambesia Exploring Company Limited. The unappropriated profits of the subsidiaries had been transferred to the parent company by way of dividend, and the capital reserve arising from these unappropriated profits, amounting to £548,564, had been re-classified as a revenue reserve. The equity investment in Geita Gold Mining Company Limited had been written down to a value of ¼d. per share. The profit for the year was £166,816, and after bringing forward the previous year's balance, and allowing for the re-classification of reserves and the adjustment of taxation of past years, a balance of £761,807 remained available for distribution. An interim dividend of 1s. 6d. per share (7½%) had been paid on March 11, 1960, and it was proposed to recommend a final dividend of 2s. 0d. per share (10%), making a total dividend for the year of 3s. 6d. (17½%), which was the same as for the previous year.

Detailed information was given in the printed review regarding the company's principal interests, including Tanganyika Concessions Limited, Tanganyika Holdings Limited, in which a participation of 50% was held, and the subsidiary company, Geita Gold Mining Company Limited. With regard to the last named, Mr. Easby reported that the last of four boreholes comprising the surface diamond drilling programme had been completed at a depth of 1,868 feet, having intersected two ore zones at depths of 1,586 feet and 1,726 feet, giving average values of 4.6 and 4.5 dwts. per ton over true widths of 22 and 8 feet respectively. While satisfactory in indicating the continuance of mineable orebodies in the mine's North East extension, these results confirmed the Board's view that the mine's future must be planned as essentially that of a low-grade proposition.

The report and accounts were adopted.

## Company News

A ground geophysical surveying department has been formed by Fairchild Aerial Surveys, Inc., a wholly-owned subsidiary of the U.S. firm, Fairchild Camera and Instrument Corporation.

★

The National Coal Board (North Western Division) has placed an order with Heyes and Co. of Wigan for an initial quantity of 500 flameproof lighting fittings for installation at the new Parkside Colliery, Newton-le-Willows, Lancs. Heyes have already supplied two 5-level Wigan Type 40 Shaft signalling indicator systems at Parkside.

★

Lodge-Cottrell report that a contract valued at approximately £600,000 has been obtained through Clarke, Chapman and Co. for the electrofilters of Nos. 7 and 8 boilers for the Central Electricity Generating Board Blyth "B" Power Station.

★

Head Wrightson Stockton Forge, a subsidiary of Head Wrightson and Co. has changed its name to Head Wrightson Stockton Ltd.

★

Craven Electronics Ltd. have moved to Victoria Works, Bingley, Yorks. Tel: Bingley 2362/3.

★

The headquarters of Remploy Ltd., the national organization employing Britain's severely disabled, will be transferred to Remploy House, 415 Edgware Road, London, N.W.2, as from October 3 next. A new showroom will be opened in Bruton Street, London, W.1, shortly, to display the entire range of products made in the company's factories.

★

The Pyrene Co., have issued the following information on the purchase of S. F. Roberts Ltd.: the name of the newly acquired company will be S. F. Roberts (1960), Ltd., it will become one of the Pyrene group, and will manufacture its range of safety products at the Windmill Road Works, Brentford. The activities of S. F. Roberts (1960) will be under the control of Mr. F. L. Dew, who has been senior executive of The Pyrene Co. for many years.

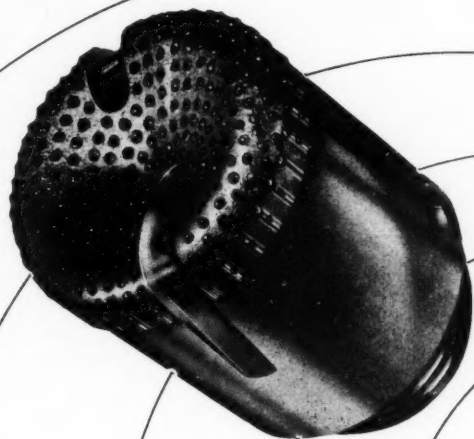
★

Under an agreement between NIKEX, the Hungarian foreign trade company, and Siskol Ltd., the British firm is to manufacture under licence, Kota loaders, but the loaders will be made in Hungary until Siskols can arrange their manufacture in Britain. A first consignment of 12 loaders has already been delivered.

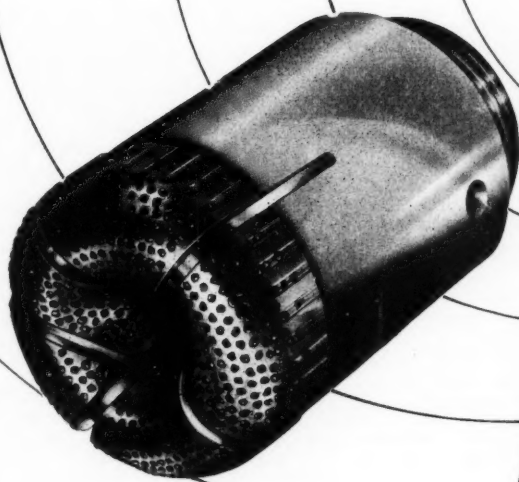
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## Book Reviews

**Reactor Handbook, second edition.** Vol. 1, *Materials*. Edited by C. R. Tipton, Jr. Battelle Memorial Institute, pp. 1207. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N.Y. and Interscience Publishers Ltd., 88/90 Chancery Lane, London, W.C.2. Price \$36.50 (£13 0s. 0d.)

This extremely comprehensive publication represents a substantial revision of the first edition published by the U.S. Atomic Energy Commission in 1955. Treatment of nearly all topics previously covered has been expanded and brought up to date and many new topics have been added. The expansion reflects not only the dramatic growth of the scientific and technical literature but also the very substantial declassification of nuclear data that has taken place during the past five years.

The handbook contains a total of 53 surveys, to which 130 reactor scientists and engineers have contributed, and is divided into five parts: General, Fuel Materials, Cladding and Structural Materials, Control Materials, Moderator Materials, Coolant Materials, and Shielding Materials. Under the appropriate headings are covered all minerals, metals and alloys important to nuclear engineering. The book has been exclusively referenced and is indexed.

**Extractive and Physical Metallurgy of Plutonium and its Alloys**, edited by W. D. Wilkinson, pp. 314. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N.Y. and Interscience Publishers Ltd., 88/90 Chancery Lane, London, W.C.2. Price 79s.

This volume contains papers on the extraction and physical metallurgy of plutonium presented at the 1959 Annual Meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers. In order to make the book more generally useful, an annotated bibliography of plutonium metallurgy is included.

For the last three years parts of the interior of New Guinea have been subject to Geological Survey with the object of assessing their economic potential.

Report 48, issued by the Bureau of Mineral Resources today entitled *The Geology of the Eastern Highlands of New Guinea*, covers a strip of country 20 miles wide and 100 miles long south of the Ramu River. Most of the land lies more than 5,000 feet above sea level.

Although minor mineralization has been found in many places—chiefly gold and copper—the survey shows that the area is unlikely to contain large mineral deposits.

Gold is the only mineral that has been produced, and most of this has been won from alluvial deposits by individuals or small parties of European prospectors. Though some prospectors have received good returns, the total value of gold production is not impressive. In the ten year period 1948/49 to 1957/58 total value of gold produced was £195,000.

It is of interest to note that although the number of Europeans engaged in gold mining in the area is declining, there has been a big increase in native

gold-seekers. The natives can operate successfully on returns which are too low to interest a European.

The Commonwealth Scientific and Industrial Research Organization maintains a mineragraphic investigations section in Melbourne and ore-dressing laboratories in Melbourne and Kalgoorlie to carry out research on the composition and treatment of ores, both as basic research and at the specific request of establishments concerned with mining production. Their work is described in C.S.I.R.O.'s report for the year 1958-59, which is printed and published for the Commonwealth Government by A. J. Arthur, Canberra. Price 10s. 6d.

*The Bulletin of the Mineral Research and Exploration Institute of Turkey*, April 1960, No. 54, contains papers by members of the Institute in French, German and English, including a study entitled *Geology Of The Mut Region*, by Ibrahim Akarsu, and *Garnet Stone Occurrences In Keskin-Celebidag Region* by Sabit Yilmaz. The contents also include reviews of the activities of the Institute during 1959 and of mining activities in Turkey.

The 49th issue of the *Aluminium Courier*, a quarterly publication produced by the Aluminium Development Association, price 2s. 6d. is presented in a new format. Among articles in this issue is one on aluminium in telecommunications and one on all-welded aluminium superstructures.

Containing abstracts of recent articles and patents, *The Asbestos Bulletin* published by Textile Improvements of Guildford, Surrey, is a new specialized publication aimed at making available to readers abstracts of periodical articles and patent specifications on the science, technology and applications of asbestos-based materials.

The work of the Cementation Group at the Kariba Dam is the subject of an illustrated article appearing in the summer number of the companies house magazine *Cementation Quarterly*, Vol. IV, No. 33.

A survey under the title "The Karroo System of the Western End of the Luano Valley," by H. S. Gair, published by the Ministry of Labour and Mines Geological Survey, Price 15s. covers the work carried out as part of evaluating the potential coal resources of Northern Rhodesia, and follows a similar survey of the Zambezi Valley. The work is a valuable study on the geology of the Karroo System.

Bulletin 31 of the Geological Survey gives Records of Boreholes drilled for the South African Department of Mines on the *Northeastern Springbok Flats Coal-Field*, with notes by H. N. Visser and S. W. van der Merwe, and is available in Pretoria price 9s. 3d.

The 4th edition of *The Mineral Resources of the Union of South Africa*, published by the South African Department of Mines and now available in Pretoria, pp. 622, price £1 13s. 3d., is intended to reflect as accurately as possible the position regarding the mineral resources of the Union, and includes statistics covering the period from 1939 to 1956, inclusive. Several entirely new features have been added, including chapters on mineral laws of the Union; the taxation of mining profits in the Union and transport and export facilities. The continued progress of mining and exploration is indicated by the greater size of the new issue.

Statistical information on Ontario's mining industry in 1958 is contained in *The Statistical Review* for that year which has been released for distribution by the Ontario Department of Mines. In addition to the general summary on production and company dividends and prices of the various products, data on individual mining operations in the province are included.

Report No. 41A *Summary of Oil Search Activities in Australia and New Guinea to June, 1959*, issued by the Bureau of Mineral Resources, Department of National Development will shortly be available (at the time of writing) in London at Australia House, London, price 10s.

A new list of the publications issued by the Ontario Department of Mines, revised to April, 1960, is ready for free distribution from the Department's publications office in Toronto. Entitled *Bulletin No. 25*, ninth edition, this issue lists all publications produced by this department since 1891.

*Mineral Facts and Problems*, Bulletin 585, U.S. Bureau of Mines, 1960 edition, pp. 1,015, price \$6, emphasizes that an adequate, dependable and continuing supply of raw materials is indispensable to the United States and its industries (as in other countries) in meeting the needs of an expanding population, a rising standard of living and the national security. In 1953, the Bureau of Mines began scheduling its research under a formal system having two basic requirements: firstly, frequent reviewing and evaluating of current work and, secondly, the undertaking of new projects, when careful appraisal has shown that they will contribute towards solving specific problems. Each of the 87 individual commodity statements making up this volume has been considered from the viewpoint of appraisal of mineral position, possible new or wider uses for abundant resources, development of submarginal resources, substitutes and conservation. Each statement culminates in a section entitled "Problems", in which factors which constitute obstacles to achievement of the major objects of industry and Government are objectively reviewed.

The South African Department of Mines now have available the *Bibliography and Subject Index of South African Geology for 1958*, published in Pretoria, price 2s. 6d.



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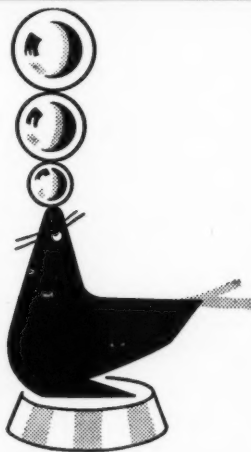
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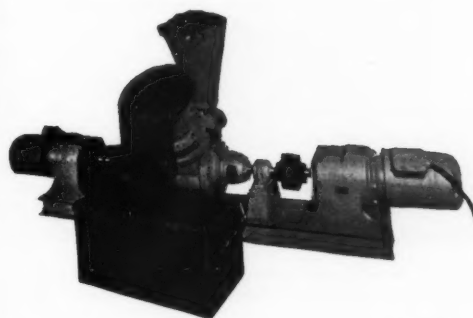
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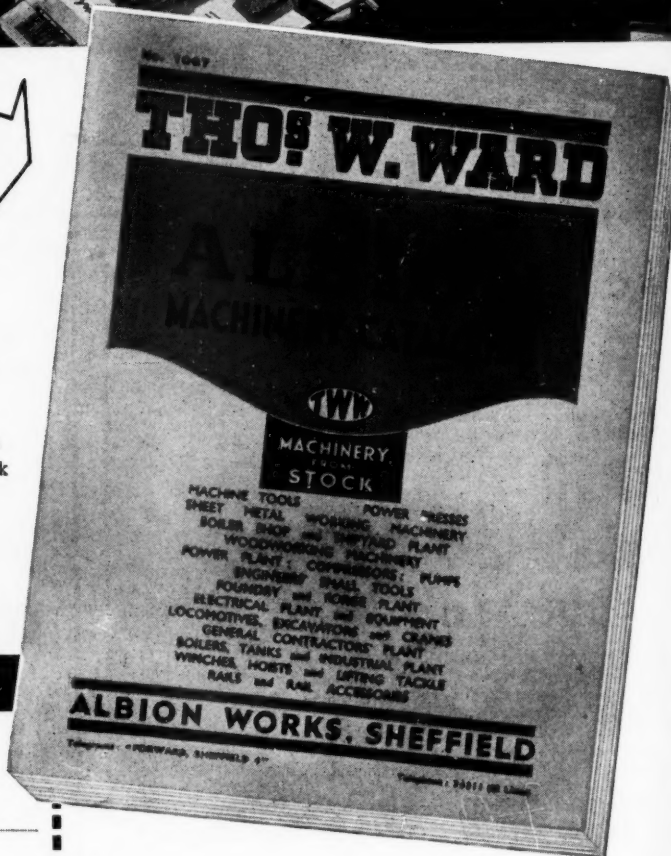
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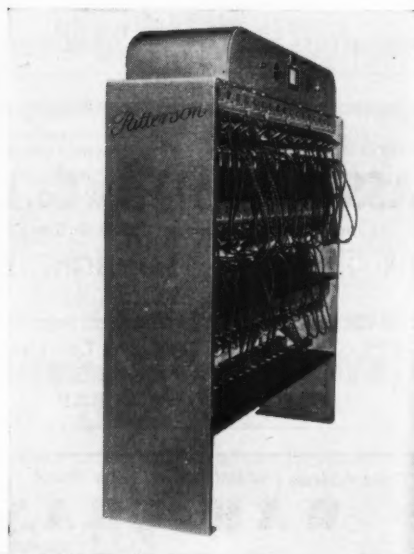
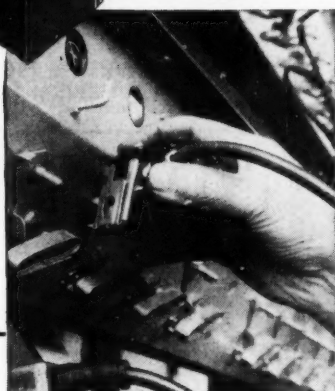
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